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# Subsidized School Meal Programs: Examining Access, Nutritional Quality, and Improvement Initiatives in Vermont Schools

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Subsidized School Meal Programs:  
Examining Access, Nutritional Quality, and Improvement Initiatives In Vermont Schools

A Thesis Presented by

Kathryn Seelen

To

The Faculty of the College of Education and Social Services

Of

The University of Vermont

In Partial Fulfillment of the Requirements

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### **Abstract**

The aim of this research is to examine subsidized school meal programs, specifically the National School Lunch Program (NSLP) and the School Breakfast Program (SBP) as served in participating Vermont schools and alternative childcare institutions. The research focuses on identifying ways in which Vermont schools and childcare institutions choose to administer subsidized school meal programs in order to meet the federal guidelines for school nutrition. The study gains additional purpose due to the autonomy given to states to design and administer school meal programs, with actual food purchasing and meal planning done at the school district level. This breakdown of jurisdiction regarding foods served to American schoolchildren dictates an investigation into how schools differ in what they serve in their respective cafeterias despite being held to the same federal standards. I utilize two forms of quantitative analysis to gather information concerning the operation of school meal programs in Vermont: (1) a survey of school food service directors based on a similar survey used in the National School Dietary Assessment Study-IV published in 2010 and (2) digital photographs taken of lunches in six Vermont schools that participate in NSLP. The study is meant to highlight the use of resources available to schools to improve nutritional value of subsidized school meals in an effort to delineate further areas for continued research in improving the quality and access to school meals. Evaluation of the survey and photographic data shows patterns in food sources, employed menu-planning resources and issues that food service personnel face on the local level resulting from state and federal expectations. Although moving in the right direction, the trends in school meal program administration at state and local levels prove the need for continual improvement and development at the federal level to verify the enduring quality of food served in all schools.

### **Acknowledgements**

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### **Terminology**

Certain terms are key for understanding how school meal programs function. The specific programs discussed are the National School Lunch Program (NSLP) and School Breakfast Program (SBP), both of which operate under the control of the United States Department Agriculture's Food and Nutrition Service division (USDA-FNS). For the purposes of this study, the two programs will at times be referred to jointly as School Meal Programs (SMP) and will sometimes be referred to individually. Additionally, the free and reduced price categories under which students who participate in NSLP and SBP can qualify for will mostly be referred to under the umbrella term Free and Reduced Price Meals (FRPM) unless otherwise noted. The individuals that design and implement SMPs also hold leverage in one's understanding of SMPs, whom from here onward will be simply referred to as Food Service Directors (FSD), a category comprised of food service managers, school food authority (SFA) directors, and sometimes business managers. Said personnel bear differing job titles depending on the size of schools, delegation of professional responsibilities, and personal preference.

### **Key Acronyms**

SMP – School meal programs (NSLP/SBP)	DGA – Dietary Guidelines for Americans
NSLP – National School Lunch Program	SNDA – School Nutrition Dietary Assessment
SBP – National School Breakfast Program	HHFKA – Healthy Hunger-Free Kids Act (2010)
FRPM – Free/Reduced Price Meals	FSD – Food Service Director
USDA – United States Dept. of Agriculture	SFA – School Food Authority
FNS – USDA Food and Nutrition Service	FtS – Farm to School

## **Introduction**

### **Personal Significance**

My interest in pursuing the topic of subsidized school nutrition programs first came about in the context of a tutoring program in which I took part during my sophomore year at a local elementary school. Before tutoring, students arrived to school an hour early, when tutors like myself would sit with the students while they ate breakfast provided by the school cafeteria. I quickly took notice of the food that the students were served: every week it was a slight variation of some sort of pre-packaged cereal, a small plastic bottle of milk and a banana of questionable ripeness. More often than not the students seemed skeptical of the quality of their pieces of fruit and would ultimately throw them away after one bite. This left them with small portions of food and drink that were meant to fill their stomachs and to ready them for working on math and reading skills. I always left the school wondering where the food came from and who decided what to serve to the children who relied on this vital source of daily nutrition. I could only hope that the students were receiving the necessary nutrients for such rapidly growing bodies.

Fast-forward to my second teaching practicum as a part of the University of Vermont's (UVM) elementary education program during my junior year: I had forgotten to pack a lunch during a typical early-morning frenzy, so my mentor teacher suggested I purchase lunch in the school's cafeteria. After my last experience in an elementary school cafeteria, I did not have high expectations. But to my surprise the options were seemingly limitless: fresh fruit cups, low fat yogurt, granola, made-to-order sandwiches with a variety of protein options as well as a salad and vegetable bar. I could not believe the differences I saw between what was served in one elementary school cafeteria compared to another only a short distance away.

As I progressed further in UVM's elementary education program, I continued to have similar experiences in other elementary schools across the state of Vermont. I completed teaching practicum in four different school districts, making sure to observe and/or experience each school's daily lunch options. I saw some schools serving locally sourced food products, some serving brand name foods, and some serving produce grown in on-site school gardens. The variety astounded me, and raised important questions as I considered the impact of nutrition on children's physical and mental well-being: first, why do public schools that presumably receive similar funding for meal programs serve food products of varying quality? Second, are schools held to any kind of standard for the food served in their respective cafeterias? And lastly, who specifically is held accountable for monitoring the nutritional content of school meal programs? From the perspective of an elementary school teacher, I developed a passion for school nutrition based on multiple factors that are instrumental to the formation of this study.

### **Social Significance**

My questions continued to develop as I spent more time in elementary schools. I began to research the subject more thoroughly during a class taken on education research methods. I found overwhelming evidence linking school nutrition to both the recent childhood obesity epidemic (Story, Kaphingst, & French, 2006; Fox, Dodd, Wilson, & Gleason, 2009) and cognitive functioning (Bellisle, 2004; Nyaradi, Li, Hickling, Foster, & Oddy, 2013). Research also provides evidence of over 16 million children in the United States living in poverty (Jiang, Ekono, & Skinner, 2014). Considering this statistic in relation to the growth of what Eric Schlosser (2002) has dubbed a "Fast Food Nation," where the convenience of processed food has a hold on much of the U.S. population's dietary choices such that "almost every facet of American life has now been franchised or chained" (p. 5), has large implications for American

children. It becomes increasingly apparent that schools as social institutions have a responsibility to provide nutritious meals as a means to combat and to improve the identified aspects of children's health and well-being. As a result, it is imperative to hold schools accountable for the provision of high quality school meals as subsidized by the federal government because students cannot be expected to attain academic and social success without proper nutrition. Combined with my questions regarding the quality, standardization and accountability for school meals, this belief yields the basis for the present study focused on NSLP and SBP.

### **Preface to Study**

The present study focuses on participating schools in the state of Vermont. The goal, based on my personal investment and chosen career path as well as multiple experiences as a pre-service teacher, is to gain a more comprehensive understanding of how SMPs function. The results may yield information that leads to widespread improvement of SMPs on all operational levels. The study will add to limited research conducted on this subject at the state level despite states' autonomy over how SMPs are administered in adherence to the applicable federal guidelines. The intersection of personal experience from an educator's point of view and larger social import gives meaning to this study insofar as its implications for schoolchildren in Vermont and beyond.

The last two years investigating school food and its administration have brought with them significant changes to the focus of my study. While my basic belief in providing nutritious food to all schoolchildren remains, the sheer enormity and complexity of the sociopolitical system in which SMPs function had a large impact on the evolution of the study. The study's intent has remained the same while much of the research and subsequent conclusions have led me in many different, yet just as crucial, directions in terms of continual SMP improvement.



## Literature Review

### Federally Subsidized SMPs

#### History.

A full understanding of federally subsidized SMPs in the US in their current forms first requires an historical examination of past configurations and major legislation. To start, in 1946 a surge in food insecurity due to the ramifications of World War II led United States President Harry S. Truman to sign the Richard B. Russell National School Lunch Act establishing the NSLP in public and private schools nationwide (Levine, 2008). Its original form provided low-cost or free meals to students through federal reimbursements for every meal served (Levine, 2008). This facet of the program still exists today. Schools were also entitled to commodity foods provided by the government in addition to agricultural surplus foods as they were made available (Levine, 2008). The program has endured multiple amendments during the course of its existence due to shifts in food supply, the needs of Americans, differing views of what constitutes “good” nutrition, and changes in leadership.

President John F. Kennedy was the next to focus on SMPs in the context of increasing poverty rates, advocating for what author Janet Poppendieck delineates in her book *Free for All: Fixing School Food in America* as, “the expansion of the school lunch program, [...] increased funding for schools providing a high proportion of free lunches and a redesign of the formula for allocating school lunch funds among the states” (p. 54). The push for standardization of school meals continued in 1962 when Congress updated the National School Lunch Act so that the federal government would reimburse schools in impoverished areas that served free meals (Poppendieck, 2010), making it a true welfare program. A transition of funding therefore

occurred from grant aid to states for all meal reimbursement (“Legislative History Highlights,” 2014).

SMPs further expanded under President Lyndon B. Johnson who enacted the Child Nutrition Act in 1966 to establish of SBP to supplement the NSLP. This act changed the course of SMPs when Johnson declared it to be the “policy of Congress that these efforts shall be extended, expanded, and strengthened under the authority of the Secretary of Agriculture as a measure to [...] meet more effectively the nutritional needs of our children” (Gunderson, 2013, para. 5). Thus SMPs have been part of the United States Department of Agriculture (USDA) since the legislation passed.

During the 1970s, the Nixon era brought with it significant changes to the management of food assistance programs, specifically the establishment of the Food and Nutrition Service (FNS) as a “unified agency within USDA” (Poppendieck, 2010, p. 64). Under the governing of the FNS, nutrition experts worked alongside school administrations to improve nutrition programs in American schools. This collaborative effort largely manifests in the form of the Dietary Guidelines for Americans (DGA). It was first started by the Senate Select Committee on Nutrition and Human Needs in the late 1970s under the name *Dietary Goals for the United States* in an effort to turn the national conversation concerning nutrition from hunger to broader issues that affect all Americans (Poppendieck, 2010).

Since its official inception in 1980, the DGA has been designated the federal policy for providing information and advice to US citizens while also serving as the basis for federal food and nutrition education programs (*Dietary Guidelines*, 2010). The DGA plays a vital yet controversial role in the decision-making process regarding food served in schools because, “While the National School Lunch Program [...] is administered at the state level, the creation

and fundamental outlines of the program – the development of national nutrition standards, eligibility requirements for free and reduced price meals, and the basic supply of donated foods available for lunch menus – emanate from Washington” (Levine, 2008, p. 5).

Furthering the overall function of SMPs during Gerald Ford’s presidency was the amendment of the Child Nutrition Act that made the School Breakfast Program permanent as well as allowing “Residential Child Care Institutions [...] to participate as ‘schools’ in NSLP” (“Legislative History Highlights,” 2014). SMPs have thus evolved to encompass a variety of functions and components in a seemingly imperfect system due to the breakdown at federal, state and local levels to essentially determine what children should be eating and executing a plan of enforcement in hopes of providing all children the same access to quality nutrition. The most recently published DGA indicates the importance of regulation due to “too many children [...] consuming diets with too many calories and not enough nutrients ... 32 percent of children and adolescents ages 2 to 19 years are overweight or obese” (*Dietary Guidelines*, 2010, p. 2).

A major part of federal efforts to gain understanding and seek improvement options for SMPs has been the USDA-commissioned School Nutrition Dietary Assessment (SNDA) studies. First completed in 1991, the study published its fourth version in 2010 under the title “SNDA-IV.” The primary function of the SNDA is to measure how schools that participate in NSLP and SBP meet the stipulated guidelines outlined in the DGA. Its first set of results in 1993 “showed that school lunches are too high in fat, even though they remain[ed], overall, the most nutrition lunchtime option for students” (“Legislative History Highlights,” 2014).

The part of the SNDA-IV most relevant to this study is a survey FSDs completed in order to provide detailed data on all foods and beverages available in NSLP and SBP meals during a typical week in the spring of school year 2008-2009 (Fox & Condon, 2012). It includes multiple

forms for the manager to fill out such as the daily meal count form, recipe form, and the self-serve/made to order bar form (Fox & Condon, 2012). SNDA-IV reflects the research benefits of measuring the efficacy of school nutrition programs on the state level because “decisions about what specific foods to serve and how they are prepared are made by local school authorities. Schools vary in how they determine if they are meeting these guidelines” (Grubinger, 2004, p. 3). Schools utilize varying food sources in cafeterias across any given state because school nutrition programs are designed and implemented on a school district-by-district basis.

Federal legislation came about once again in the form of the Healthy Meals for Healthy Americans Act passed in 1994. The act amended both the National School Lunch Act and the Child Nutrition Act of 1966 to revise and reauthorize child nutrition programs (US House of Representatives, 1994). Some of the most notable changes resulting from the act are as follows: schools’ right to purchase produce outside of the commodity foods provided by USDA, the expansion of programs to serve low-income and impoverished students inside and outside of the traditional cafeteria setting, overall improvement of entitlement food nutritional quality served in schools, the establishment of pilot programs in schools to enhance nutrition in school meals, the provision of technical assistance in helping schools refine school meal programs, the fusion of the lunch and breakfast programs into a comprehensive meal program, and restricting sales of competitive foods in elementary schools during mealtimes (US House of Representatives, 1994). Above all the act formally required school meals to conform to DGA while widening the meal planning process to give schools more autonomy in how they choose to serve school meals (US House of Representatives, 1994).

1996 saw the last integral shift in school meal programs during the twentieth century via federal mandates in the Healthy Meals for Children Act. This legislative product built on other

amendments to the National School Lunch Act through its purpose to “provide more flexibility to local schools in demonstrating that they have met the Dietary Guideline [for Americans] requirements” (US House of Representatives, 1996, para. 1) so as to increase access to school meals by means of serving foods that children will want to eat that still maintain the necessary nutritional value specified in the DGA (US House of Representatives, 1996). Schools therefore have the freedom to use any “reasonable approach” to menu planning that makes both specified components possible including food-based menu planning, the annual school nutrition meal patterns and nutrient analysis (US House of Representatives, 1996). Thus a loosening of the previously strict policy enforcing adherence to nutrition standards occurred and allowed for more diversification of how individual schools, school districts and eligible childcare institutions administer SMPs in their respective cafeterias.

The differences in school food service raise questions regarding the quality of school nutrition programs. If the FNS, state education departments and local school food authorities are in charge of different parts of SMP regulation, it seems difficult to determine whether all schools in a given state are meeting federal guidelines. Because of the intense need, it is imperative for federal and state governments to hold schools accountable concerning the quality of meals, but to whom do individual schools, school districts, and child care institutions report in relation to the federal guidelines and how often? The issues that spawn from what has become a fragmented, evidently bureaucratic system leads into how SMPs operate today.

**Current state (2000-Present).**

The establishment of federally subsidized SMPs has proven effective in guaranteeing American children food options during the school day, yet schools across the country have found it increasingly difficult to “cover program costs and encourage student participation while improving the quality of meals served to children” (Guthrie, 2010, para. 3). Multiple factors such as national increases in food insecure households as well as the much publicized childhood obesity epidemic have contributed to an intensified need for government agencies to tighten school nutrition standards given the fact that schools are often the main source of daily nutrition for millions of American children (Fox & Condon, 2012).

***Child Nutrition and WIC Reauthorization Act (2004).***

Regulation of nutrition in schools continues to tighten despite its obstacles. Substantial legislative changes were made in 2004: the Child Nutrition and WIC Reauthorization Act that included amendments to the National School Lunch Act. The law provided updated regulations concerning the administration of SMPs based on changing needs and functions of low-income families. The revisions pertinent to this study included (US Senate, 2004, pp. 1-37):

- Increased funding for state agencies to promote nutrition in SMPs
- Schools required to report all purchases and consequent reallocation of unused funds
- Direct eligibility certification for schoolchildren in food stamp households who qualify for FRPM as well as increased use of computer technology to track student FRPM eligibility in efforts to reduce paperwork for families
- Eligibility determination delegated to local school food authorities
- Required annual food safety inspections in schools that serve SMPs
- Encouragement and some federal funding put towards local food purchasing

- Schools with high proportions of FRPM students may serve all school meals free for extra subsidy cost
- The establishment of the Fresh Fruit and Vegetable Program (FFVP) for schools to receive produce outside of commodity foods as well as provision of funds through grants and technical assistance to schools and nonprofits for projects such as school gardens, farm-to-school networking and nutrition education
- Funding for the Food Service Management Institute (FSMI) to train food service personnel in order to provide high quality, cost-effective school meals
- Funding for studies to be conducted on the national level to evaluate meal production costs, nutritional value of meals and the status of meal planning practices
- The required implementation of local wellness policies to be determined by all local education agencies (e.g. school food authorities) that participate in SMPs

***Healthy Hunger-Free Kids Act (2010).***

The school food paradigm underwent yet another shift in 2010 under the leadership of current First Lady Michelle Obama with President Obama's approval. Obama's position that "all children should have the basic nutrition they need to learn and grow and pursue their dreams, because [...] nothing is more important than the health and well-being of our children" (Lee, 2010, para. 2) paved the way for the enactment of the Healthy Hunger-Free Kids Act (HHFKA). Through HHFKA, Congress specifically aimed efforts at increasing access to quality nutrition for low-income children ("Child Nutrition Reauthorization," 2010). The bill essentially refashioned the 2004 Child Nutrition WIC Reauthorization Act to meet current needs of schools including "\$4.5 billion in new funding for [school meal] programs over 10 years" ("Child Nutrition Reauthorization," 2010, p. 1) so as to help schools meet updated nutritional standards.

HHFKA honed in on three areas of child nutrition: improved nutrition through focus on reducing childhood obesity, increased access, and increased program monitoring and integrity (“Child Nutrition Reauthorization,” 2010). It built on current USDA work to improve the nutritional quality of commodity foods given to schools by the government to serve in SMPs, also allowing for initiatives to continue the growth of the school garden movement and farm-to-school programs (“Child Nutrition Reauthorization,” 2010) that add to said improvement initiatives. Increased access efforts involve the number of eligible FRPM schoolchildren increasing by 100,000+ through use of Medicaid data for direct certification (“Child Nutrition Reauthorization,” 2010) and more universal meal access for eligible students by eliminating paper applications (“Child Nutrition Reauthorization,” 2010). New program monitoring requirements included school audits every three years for food quality and safety (“Child Nutrition Reauthorization,” 2010).

***Dietary Guidelines for Americans (2010).***

HHFKA fortified the relationship between the FNS, nutrition experts, and school administrations to improve SMPs. This collaborative effort largely manifests in the form of the most recent version of the DGA published in 2010 that purposely coincided with HHFKA being passed into law. The guidelines stipulate three goals for Americans to meet in terms of diet: (1) to balance calories with physical activity to manage weight, (2) to consume more fruits, vegetables, whole grains, fat-free/low-fat dairy, and seafood, and (3) to eat fewer foods with sodium, saturated fats, trans fats, cholesterol, added sugars, and refined grains all with progression towards a healthier lifestyle in mind (*Dietary Guidelines*, 2010). DGA specifically targets schools as one of the main environmental settings operating within the larger social ecological framework for nutrition decisions (*Dietary Guidelines*, 2010). The guidelines



explicitly identify said settings under the headline “Facilitate individual behavior changes through environmental strategies” including developing “legislation in key sectors such as [...] school foodservice [...] to prevent and reduce obesity” (*Dietary Guidelines*, 2010, p. 58).

Another DGA section pinpoints how to “set the stage for lifelong healthy eating physical activity, and weight management behaviors” (*Dietary Guidelines*, 2010, p. 58) by means of ensuring “that all meals and snacks sold and served in schools and childcare and early childhood settings are consistent with the Dietary Guidelines” (p. 58). Table 1 summarizes specific daily recommendations set out by the DGA for children and adolescent dietary intake by age (*Dietary Guidelines*, 2010, Appendices 5 and 6).

**Table 1** – Daily dietary intake recommendations by Age<sup>1</sup> according to DGA (2010)

<b>Nutrition Component<sup>2</sup></b>	1-2 (Ages)	3-5	6-8	9-10	11-12	13-14	15-16	17-18
Calories	1,000	1,300	1,600	1,750	2,000	2,250	2,300	2,400
<b>Macronutrient</b>								
Protein <sup>3</sup>	5-20	7-30	10-30	10-30	10-30	10-30	10-30	10-30
Carbohydrate <sup>3</sup>	45-65	45-65	45-65	45-65	45-65	45-65	45-65	45-65
Total Fat <sup>3</sup>	30-40	25-40	25-35	25-35	25-35	25-35	25-35	25-35
Total Fiber (g)	14	16	18	21	23	25	28	28
Saturated Fat <sup>3</sup>	<10	<10	<10	<10	<10	<10	<10	<10
Cholesterol (mg)	<300	<300	<300	<300	<300	<300	<300	<300
<b>Minerals</b>								
Calcium (mg)	700	900	1,000	1,300	1,300	1,300	1,300	1,300
Iron (mg)	7	9	10	8	8	12	13	13
Sodium (mg)	<1,500	<1,700	<1,900	<2,200	<2,200	<2,250	<2,300	<2,300
<b>Vitamins</b>								
Vitamin A (mcg)	300	350	400	500	600	650	800	800
Vitamin C (mg)	15	20	25	35	45	55	70	70

<sup>1</sup> The DGA divides recommendations by gender. Caloric estimates are divided by gender and level of physical activity. For the purposes of the current study the numbers have been averaged together to reflect typical dietary intake levels by age group.

<sup>2</sup> The nutritional components included are those that appear in the survey sent to FSDs.

<sup>3</sup> Nutrition components measured in % of daily caloric intake. Percentages are measured as ranges because they vary depending on the individual.

Table 2 shows calculated averages for daily food group intakes based on caloric intake (*Dietary Guidelines*, 2010, Appendix 7). The regulations align with physical developmental stages children endure (*Dietary Guidelines*, 2010, p. 55).

**Table 2** – Daily USDA average food group intake amount recommendations by caloric intake<sup>4</sup>

	<i>Average Caloric Intake</i>	
	1,000-1,999	2,000-2,400
<i>Food Group Type</i>		
Fruits (c <sup>5</sup> )	1.25 <sup>6</sup>	2
Vegetables (c)	1.75	2.75
Grains (oz <sup>7</sup> )	4.5	7
Protein Foods (oz)	3.5	6
Dairy (c)	2.5	3
Oils (g)	19.5	29
Maximum calories from Solid Fats/Added Sugars (% of calories)	11	13

A last significant section of the DGA strives to guarantee access for all Americans “to nutritious foods and opportunities for physical activity” (*Dietary Guidelines*, 2010, p. 57) largely through an “increase [in] food security among at-risk populations by promoting nutrition assistance programs” (p. 57). SMPs are included under the umbrella of nutrition assistance programs as evident by its history and current need. Federal legislation mandates free and reduced price meals for students who are eligible based on family income, a service in high demand as indicated by the 2013 statistic that two-thirds of U.S. students attending public schools who participate in SMPs qualified for free/reduced price meals (“Participation and Lunches Served,” 2014). This number has more than tripled since 1970 (“Participation and Lunches Served,” 2014).

<sup>4</sup> Caloric intakes based on ages of schoolchildren that participate in SMPs; the first category covers ages 1-10, the second covers 11-18.

<sup>5</sup> Amounts measured in cups.

<sup>6</sup> Numbers are calculated averages based on DGA (2010) recommendations.

<sup>7</sup> Amounts measured in ounces.

Additional statistics prove the import and usage of SMPs (“National School Lunch,” 2013):

- NSLP has served over 224 billion meals to US schoolchildren since its inception in 1946, including 31.6 million meals in 2012
- In 2012, NSLP had an overall cost of \$11.6 billion
- SBP currently serves over 12 million children (“The School Breakfast Program,” 2013)

***Final rule of school nutrition standards (2012).***

Schools began implementing the current nutrition standards in early 2012. The Final Rule on updating meal patterns and nutrition standards for NSLP and SBP to align with the 2010 DGA expected all schools to comply by July 1, 2012, requiring SMPs to “increase the availability of fruits, vegetables, whole grains, and fat-free and low-fat fluid milk in school meals; reduce the levels of sodium, saturated fat and *trans* fat in meals; and meet the nutrition needs of school children within their calorie requirements” (“Final Rule,” 2012, p. 4088) based on recommendations made by the Institute of Medicine (IOM) (“Final Rule,” 2012). The IOM is an “independent, nonprofit organization that works outside of government to provide unbiased and authoritative advice to decision makers and the public” (“About Us,” 2013) whose report titled “School Meals: Building Blocks for Healthy Children” (Institute of Medicine, 2009) set forth specific portioning improvements for SMPs based on the new standards.

Thus the aforementioned Final Rule addressed concerns of the public and altered parts of the HHFKA requirements to meet the needs of all “stakeholders – the children, the schools, and their supply chains” (“Final Rule,” 2012, p. 4088). The revisions included a notable estimated decrease in meal costs for schools based two factors: (1) additional time given to schools to implement new standards for SBP and (2) increased revenues for schools via the sale of à la carte

foods as well as a 6-cent federal reimbursement for every school meal served. The IOM's instrumental role in improving school meals is reflected in the following table summarizing school meal pattern requirements as specified by the Final Rule served ("Comparison of Current and New Requirements," pp. 1-3):

**Table 3** – School meal patterns as required by the Final Rule nutrition standards in SMPs<sup>8</sup>

	Breakfast Meal Pattern			Lunch Meal Pattern		
	Gr. <sup>9</sup> K-5	6-8	9-12	K-5	6-8	9-12
Meal Pattern	Amount of Food Per Week (Minimum Per Day)					
Fruits (c)	5 (1)	5 (1)	5 (1)	2.5 (.5)	2.5 (.5)	5 (1)
Vegetables (c)	0	0	0	.75	.75	1.25
Grains (oz)	7-10 (1)	8-10 (1)	9-10 (1)	8-9 (1)	8-10 (1)	10-12 (2)
Fluid Milk (c)	0	0	0	8-10 (1)	9-10 (1)	10-12 (2)
Other Specifications: Daily Amount Based on the Average for 5-day Week						
Min-max calories	350-550	400-550	450-600	550-650	600-700	750-850
Saturated Fat (% of total calories)	<10	<10	<10	<10	<10	<10
Sodium (mg)	≤430	≤470	≤500	≤640	≤710	≤740
Trans fat (g)	Nutritional label or manufacturer specifications must indicate 0 g per serving.					

***Menu planning and food purchasing.***

The extensive nature of both NSLP and SBP has given shape to their administration on the federal, state, and local levels. Perhaps the most complex component of administering these programs is the meal planning and food purchasing process. The aforementioned Healthy Meals for Children Act made it legal for schools to use any reasonable approach to plan menus for SMPs that allows them to meet federal guidelines. However, the Final Rule on nutrition standards in 2012 ruled that one approach – Food-Based Menu Planning (FBMP) – shall be used to plan menus ("Final Rule," 2012), requiring that both NSLP and SBP utilize this approach

<sup>8</sup> Gr. = School grades

<sup>9</sup> Table adapted from federal legislation for "Final Rule Nutrition Standards in the National School Lunch and School Breakfast Programs 2012"

beginning in Fiscal Year 2013-2014 (“Final Rule,” 2012). This ruling was meant to (1) simplify menu planning, (2) assure that students nationwide have access to key food groups recommended by the DGA, (3) make it easier for schools to communicate the meal improvements to parents and community members, and (4) simplify program management, training and monitoring in efforts to reduce program costs (“Final Rule,” 2012, p. 4090).

The history of meal planning, as Poppendieck (2010) explains, shows that until the Healthy Meals for Children Act passed, FBMP had been the primary method employed. This act brought the Nutrient Standard Menu Planning (NSMP) approach to the forefront of school meal initiatives as a progressive way to monitor menu planning through computer programming that would increase consumption of fruits and vegetables in school cafeterias (Poppendieck, 2010). However, many FSDs opposed this change due to lack of computer training, fear of increased costs, and resentment for federal micromanagement (Poppendieck, 2010). The Healthy Meals for Children Act therefore permitted both FBMP and NSMP as usable based on individual schools’ preference (Poppendieck, 2010). FBMP can be broken into two categories: traditional and enhanced (Poppendieck, 2010). A significant number of schools had been using the NSMP approach (“Final Rule,” 2012, p. 4090) before the final rule, making FY 2013-2014 a transition year for schools who were obliged to switch methods. Thus NSMP is currently being phased out in favor of FBMP because it is more aligned with the IOM and DGA recommendations for food group servings (“Final Rule,” 2012, p. 4090).

A variant of NSMP called Assisted Nutrient Standard Menu Planning that allows “for the menu planning to be done by a consultant, a state agency, or some other external source” (Poppendieck, 2010, p. 81) was established in the Healthy Meals for Children Act. Thus many schools have put menu planning into the hands of Food Service Management Companies

(FSMCs) (Poppendieck, 2010). FSMCs were first introduced during the Nixon era when a huge increase in SMP participation spawned a need “to find ways to get meals to children in aging inner-city schools without kitchens or lunchrooms” (Poppendieck, 2010, p. 62). Thus schools began contracting out to private companies to do the planning and food purchasing for them. Around that time schools faced cutbacks in federal funding and turned to FSMCs to reduce labor costs because FSMCs were responsible for maintaining records, handling bookkeeping and assuming liability (Poppendieck, 2010). Today FSMCs continue to be a viable option for school food authorities to utilize under the jurisdiction of their respective state agencies (“USDA State Agencies,” 2009, p. I-1). State agencies are required to annually review contracts between school food authorities and FSMCs “to ensure compliance with all the provisions and standards set forth” by federal regulations (“USDA State Agencies,” 2009, p. 1-1). SFAs still retain responsibility for overall SMP operations, but contracts with FSMCs allow for joint decision-making over food purchasing, menu planning and facilitating procurement of USDA commodity foods (“USDA School Food Authorities,” 2009).

Food purchasing for SMPs requires FSDs to do the following before actually purchasing products (Martin & Conklin, 1999, p. 395):

- Research and define movement of products from their sources to schools
- Develop a product list
- Estimate quantities to purchase
- Develop food descriptions that define characteristics to meet menu/budget requirements
- Research quality indicators for each product
- Screen brands for approval
- Come up with methods to apply when obtaining products

These loose guidelines are open to interpretation by the persons responsible for food purchasing at the local level, which contributes to significant variability in the kinds of products purchased and served as part of NSLP and SBP as long as they are meeting the federal standards.

An element FSDs consider when purchasing food products is Child Nutrition (CN) labels under which “manufacturers of [competitive food] products guarantee that they provide specified components of the federal meal plan and assume the financial risk if they should be found to fall short” (Poppendieck, 2010, p. 5). Food items with CN labels must contribute to the meat/meat alternate category of the school meal pattern requirements (“USDA CN Labeling,” 2014). In the past CN labels have sparked controversy because schools have turned to prepackaged and processed foods that come complete with the CN label (Poppendieck, 2010), yet the USDA-FNS website assures the labels’ adherence to federal guidelines for food quality (“USDA CN Labeling,” 2014).

Poppendieck (2010) discusses how food purchasing for SMPs is largely rooted in USDA commodity foods. USDA purchases these products and sells them to schools at a minimal cost that are “often lower in cost than similar products a school can purchase on its own” (“USDA Foods: Commodities,” 2008, p. 1). The program offers almost 200 processed or ready-to-process “frozen, fresh, canned and dried products” (p. 2) convenient for serving, the most popular of which include cooked sausage patties, pork barbeque, fruit pops, chicken nuggets, bologna and pizza (“USDA Foods: Commodities,” 2008). USDA foods account for “15-20% of federal school lunch expenditures” for those participating in NSLP and SBP therefore serving as an indispensable resource for schools on tight food purchasing budgets (“USDA Foods: Commodities,” 2008, p. 2). Commodities come as entitlement foods or ‘bonus’ foods if an agricultural surplus becomes available (“USDA Foods: Commodities,” 2008). As with most

USDA-FNS programs, it is largely administered at the state level by designated agencies who delegate agreements with processors for local school food authorities (2008). While USDA commodity foods are regulated for nutritional quality in meeting federal standards, the USDA Commodity Foods fact sheet published by the National Alliance for Nutrition and Activity notes, “[processing USDA foods] also may decrease the nutritional quality of USDA Foods by adding fat, sodium, and sugars” (“USDA Foods: Commodities,” 2008, p. 3).

Additional subsidized commodity programs have been put in place to supplement SMPs in a cost-effective manner such that Poppendieck (2010) describes the USDA Fresh Fruit and Vegetable Program (FFVP). FFVP provides free fruits and vegetables to elementary school students daily with a goal to “improve children’s overall diets and create healthier eating habits to impact their present and future health” (“USDA Fresh Fruit,” 2013, p. 1). The program was officially established in all states as part of the National School Lunch Act designed for elementary schools with high proportions of students qualifying for FRPM (“USDA Fresh Fruit,” 2013). It is important to note that the program operates via USDA-FNS at the federal level but is left to state educational agencies for administration (“USDA Fresh Fruit,” 2013). The fruits and vegetables served are purchased by SFAs through the same system as NSLP and SBP and must be served *outside* of regular meal times (2013). Eligible elementary schools submit applications affirming local support and implementation plans that typically include integration into nutrition education, but again the decision-making lies in the hands of SFAs and state agencies in terms of purchasing, organizing and implementing the program (“USDA Fresh Fruits,” 2013).

The Department of Defense Fresh Fruit and Vegetable Program (DoD Fresh) is a partnership between the Departments of Defense and Agriculture to supplement school meals with fruits and



vegetables by offering “schools a wider variety of fresh produce than would normally be available through USDA purchases” (“Department of Defense,” 2008, p. 1). It serves as an extension of the USDA Commodity Food program by allowing states to utilize allocated commodity entitlement funds and reimbursements received for FRPM to purchase produce from a network of suppliers that are served as part of SMPs (“Department of Defense,” 2008).

### **School Nutrition in Vermont**

School nutrition programs in Vermont are administered under the leadership of the Vermont Agency of Education’s Child Nutrition Program team, one of many state agencies that serve as primary means by which local SFAs stay up to date on school meal standards and available resources to improve programs. Vermont has its own sets of issues, guidelines, and policies unique to the state that influence the functioning of SMPs in all participating schools.

#### **Policy mandates.**

As required in all states, several Vermont policies outline operation of federal meal programs. Section 1264 of Policy VT H 54 states, “Each school board actually operating a public school shall cause to operate within the school district a food program which makes available a school lunch [...] and a school breakfast [...] to each attending pupil every school day” (“Federal School Meal Programs,” 2003, para. 1).

A second related policy mandate took effect in 2007 titled “Vermont Products” that stipulated, “... it is in the best interests of Vermont children, farmers, and communities to empower schools, regulated child care programs, and state agencies to increase their use of local farm products in their food service programs, particularly school meal programs because [...] this is particularly important for the 21,000 Vermont children who live in households unable to provide enough nutritious food in order to lead an active and healthy life” (“Federal School Meal

Programs,” 2003, para. 1). This policy is unique to Vermont in that it seeks to promote local economy that largely lies in small agriculture, including a local foods mini-grant program created by Vermont’s agency of agriculture to create and strengthen relationships between schools and farms by means of providing funding for “equipment, resources, and materials that will help to increase use of local foods in the school food service program” (“Federal School Meal Programs,” 2003, para. 1).

Additionally the policy allows for government to “work with existing programs and organizations to develop and implement educational opportunities for farmers to help them increase their markets through selling the products to schools [...] and participating in the federal food commodities program, including the Department of Defense Fresh Program” (“Federal School Meal Programs,” 2003, para. 1). Finally, the policy outlines provision of increased training of school food service personnel in preparing locally grown products and the requirement for the state commissioner of education to report how many school districts adopted local wellness policies as delineated in the Child Nutrition and WIC Reauthorization Act of 2004 (“Federal School Meal Programs,” 2003).

### **Vermont Nutrition and Fitness Policy Guidelines.**

The Vermont Nutrition and Fitness Policy Guidelines were developed in 2005 by the state agencies of agriculture, education and health to reflect the DGA (Vermont Dept. of Education, 2008). The Guidelines specify requirements for nutrition in all Vermont school food service programs, including the establishment of local wellness policies in every school district as mandated by the Child Nutrition and WIC Reauthorization Act (Vermont Dept. of Education, 2008). The guidelines explicitly state that all schools participating in NSLP and SBP meet the federal standards, promote purchasing and consumption of locally grown foods as part of SMPs

and institute state nutrition standards for all foods sold outside of reimbursable meals (“à la carte”) (Vermont Dept. of Education, 2008). The standards are specific to each school level as indicated in the table below:

**Table 4** – Summary of Vermont nutrition standards for foods sold outside of NSLP and SBP<sup>10</sup>

	<b>Elementary School</b>	<b>Middle School</b>	<b>High School</b>
Meal Service Periods	<i>Eliminate</i> foods sold outside NSLP/SBP	<i>Limit</i> foods sold outside of NSLP/SBP	<i>Limit</i> foods sold outside of NSLP/SBP
Beverages <sup>11</sup>	Water, juice, low/non-fat milk, yogurt drink	Water, juice, low/non-fat milk, yogurt drink	Water, juice, low/non-fat milk, yogurt drink
Calorie Limits	<i>No</i> limits on produce, 100-150 calories per serving	<i>No</i> limits on produce, 100-180 calories per serving	<i>No</i> limits on produce, 100-200 calories per serving
Fat Limits	≤35% total calories from fat per serving	≤35% total calories from fat per serving	≤35% total calories from fat per serving
Sugar Limits	≤35% by weight except fruits	≤35% by weight except fruits	≤35% by weight except fruits
Sodium Limits <sup>12</sup>	≤230 mg per serving	≤230 mg per serving	≤230 mg per serving

The state department of education published a report on January 30, 2007 summarizing the results of a survey sent to all Vermont school districts as required by Vermont’s state policy on food products (Vermont Dept. of Education, 2007) to determine how many districts have adopted a local wellness policy. Results showed that over 70% of Vermont districts had adopted a policy, and those who had not planned to adopt a policy by mid-2007 (Vermont Dept. of Education, 2008). Further review of several school districts revealed variability in wellness policies such as some almost identical to the Vermont Nutrition and Policy Guidelines, some whose language was more restrictive than the Guidelines, and some who elaborated on à la carte and vending sale requirements (Vermont Dept. of Education, 2008).

<sup>10</sup> Adapted from table listed in Vermont Nutrition and Fitness Policy Guidelines.

<sup>11</sup> Original table includes portion sizes that vary depending on student age.

<sup>12</sup> Some exceptions depending on food type.

**Elimination of reduced price category.**

In 2013, Vermont legislature made a major change to SMPs by eliminating the reduced category of FRPM eligibility requirements (“Reduced Price Meals,” 2013). The legislation specifically states, “starting in the 2013-2014 school year, students meeting reduced-price income guidelines, households at or below 185% of poverty, will receive breakfast and now lunch at no charge” (“Reduced Price Meals,” 2013, p. 1). Schools still receive federal reimbursement for meals as well as the standard amount per meal in the reduced price category reimbursed by the state (“Reduced Price Meals,” 2013).

**Statewide rates of food insecurity.**

Food insecurity is divided into two categories: the USDA defines low food insecurity as “the lack of access to enough food to fully meet basic needs at all times due to lack of financial resources” (“Vermont Hunger Facts,” 2013, p. 1). Food insecurity *with hunger* includes “those food insecure homes in which [...] children’s intake has been reduced to the point that the children are likely to be hungry on a regular basis” (“Vermont Hunger Facts,” 2013, p. 1). In Vermont, the education and advocacy organization Hunger Free Vermont reports 13% of all Vermont households as food insecure and 21% of children in the state live in food insecure homes (“Vermont Hunger Facts,” 2013).

The organization strives to improve participation and nutritional quality in SMPs statewide, partnering with Vermont Food Education Every Day (VT FEED), to expand the programs where “higher quality food leads to increased participation, increased participation leads to greater revenue, greater revenue leads to more opportunities to take advantage of local food, which again leads to more participation” (“School Meals Expansion,” 2013, para. 4). This also works to combat food insecurity for those students who rely on FRPM. Hunger Free Vermont and VT

FEED worked together to create a website called “School Meals VT” to serve as a comprehensive source of “information and resources about school nutrition for foodservice professionals, administrators, parents, and community members” (“School Meals VT,” 2014, para. 2) that works toward their mutual goal of increasing access to SMPs for those who need it most (“School Meals Expansion,” 2013).

### **Nutritional Issues Affecting US Children**

Researcher and author Janet Poppendieck (2010) says it best when she states, “school food is simultaneously tasked with alleviating poverty, ending hunger, reducing waste, controlling spending, and overcoming childhood obesity, along with its original goals of safeguarding the health and well-being of the nation’s children and encouraging the domestic consumption of nutritious agricultural commodities” (p. 83). Herein lies the multi-faceted nature of SMPs and the factors relying on their efficiency and quality. It is of paramount importance when examining SMPs to understand the effects of nutrition on children’s development and overall health. Studies show the impact of nutrition on (1) cognitive development relating to academic performance, (2) childhood obesity, and (3) poverty and hunger. All three factors are substantiated by large bodies of research published in the last decade, of which significant works are delineated to support their relevance to the present study.

#### **Cognitive development.**

Bellisile (2004) looked at the effect of diet on behavior and cognition in children by synthesizing existing data on the relationship, looking specifically at such factors as glucose effects, breakfast effects, snacks, and vitamin status in relation to intelligence score. She concludes, “In several instances, it has been revealed that the clearest effects of nutritional manipulations on cognitive efficiency and behaviour are obtained in young people with poor

nutritional status” (Bellisle, 2004, p. S230). Nutritional status combined with other environmental factors influencing cognitive functioning make it doubly imperative for young people to have varied diets including good nutritional content and a consistent meal pattern (e.g., breakfast and snacks every day), according to Bellisle (2004).

Authors Sorhaindo and Feinstein (2006) researched the relationship between child nutrition and school outcomes via review of important literature concerning nutrition in relation to physical and mental health, and behavioral or social outcomes in children. Key findings include (Sorhaindo & Feinstein, 2006, pp. i-ii):

- Nutrition believed to impact individual behavior such as concentration and engagement
- Maintaining glucose levels contributes to good cognition
- Deficient children susceptible to metabolic changes impacting brain performance
- Low income obstructs healthy eating; culture, lack of literacy/education reinforce this

Florence, Asbridge, and Veugelers (2008) furthered research on diet and cognition by investigating the association of diet quality and academic performance via a survey of 5000+ fifth grade students and parents in Nova Scotia. The survey collected and analyzed information on socioeconomic characteristics, weight, height, gender, and dietary intake (Florence, Asbridge, & Veugelers, 2008). Results indicate, “as increased levels of educational attainment and income facilitate increased understanding of nutrition messages and access to healthy food, children from socioeconomically advantaged families are more likely to consume healthy diets” (Florence, Asbridge, & Veugelers, 2008, p. 1). Moreover, students reporting increased diet quality were significantly less likely to fail a literacy assessment administered to all elementary school students in Nova Scotia, as were those with an increased fruit and vegetable intake and lower fat intake (Florence, Asbridge, & Veugelers, 2008). The researchers concluded that

analysis reflects the need for “the broader implementation and investment in effective school nutrition programs that have the potential to improve student’s diet quality, academic performance, and [...] health” (Florence, Asbridge, & Veugelers, 2008, para. 24).

Researchers Nyaradi, Li, Hickling, Foster, and Oddy (2013) recount earlier findings of certain micronutrients effects on children’s cognitive development such as omega-3 fatty acids, vitamin B12, folic acid, zinc, iron, iodine, and multivitamins. However, the main focus is the intersection of diet, food and cognitive performance of which malnutrition, breakfast, and dietary quality are key components globally (Nyaradi, Li, Hickling, Foster, & Oddy, 2013). Evidence shows that “malnourished children have less energy and interest for learning that negatively influences cognitive development” (Nyaradi, Li, Hickling, Foster, & Oddy, 2013, para. 41). In addition, breakfast is proven beneficial for cognitive development because increased glucose intake provides energy, especially for malnourished children (Nyaradi et al., 2013). Research also supports correlations between IQ scores and early establishment of dietary patterns that are ‘health conscious’ rather than being comprised of processed foods (Nyaradi et al., 2013).

### **Childhood obesity.**

The Center for Disease Control and Prevention (CDC) reports health risks associated with childhood obesity as follows: high blood pressure, high cholesterol, increased risk for cardiovascular disease, increased risk of type 2 diabetes, breathing problems, joint problems, and psychological problems like low self-esteem (“Childhood Obesity Facts,” 2014). CDC states that childhood obesity has more than doubled in children and quadrupled in adolescents in the last thirty years (“Childhood Obesity Facts,” 2014). Ogden, Carroll, Kit, and Flegal (2014) assert that more than one-third of US adults and 17% of youth are classified as obese based on body mass index (BMI). 31.8% are either overweight or obese, a statistic that supports researchers’

conclusion that “obesity prevalence remains high and thus it is important to continue surveillance” (Ogden, Carroll, Kit & Flegal, 2014, para. 6).

Fox, Dodd, Wilson, and Gleason (2009) conducted a study using the results of the SNDA-III study conducted in 2005 to examine how a child’s school food environment and related practices correlate with his/her BMI. The results are meant to inform policies in schools regarding the reduction of obesity in schoolchildren. Roughly 40% of participating students qualified for FRPM (Fox, Dodd, Wilson, & Gleason, 2009). It used quantitative methods to collect data in terms of weight and height so as to calculate BMI, determine averages, and identify trends in the data. FSDs were asked to complete a survey concerning the meals served in their cafeterias during a given week (2009). The results consisted of patterns such as a strong correlation between the offering of French fries/potato products and dessert more than once per week in subsidized school meals and higher likelihood of childhood obesity in elementary school children. Middle school children experienced a higher likelihood of childhood obesity when they had the choice of low-nutrient, energy-dense food in schools. They had a lower likelihood of obesity when they had the option of purchasing à la Carte food items in schools, meaning they can be purchased separately rather than as part of a meal. Fox, Dodd, Wilson, and Gleason (2009) concluded that food service professional staff is a critical resource to enable communities to collaborate on promoting healthy nutrition choices for children. Schools should also be limiting low-nutrient, energy-dense food products in their cafeterias in order to reduce the likelihood of childhood obesity.

School nutrition has long been linked with childhood obesity, such as researchers Story, Kaphingst, and French (2006) discuss in their report on obesity’s correlation with low academic performance as “a poor marker [...] not the cause itself” (p. 110) because low achievement in



school has many causes such as socioeconomic status, lower parental education, and parental depression as well as poor nutrition. Thus childhood obesity is a contributing factor that must be taken into account when examining the role of schools in its prevention, especially when considering social repercussions such as bullying and loneliness that most often manifest in the school setting (Story, Kaphingst, & French, 2006, p. 110). IOM also (2005) specified immediate steps needing to confront the childhood obesity epidemic, highlights including (“Overview of the IOM’s Study,” 2005, p. 2):

- The *federal* government should establish an interdepartmental task force to coordinate federal actions, develop nutrition standards for foods and beverages sold in schools, expanding funding for prevention research, fund state-based nutrition grants and develop guidelines regarding advertising and marketing to children
- *State* and *local* governments should work with communities to support partnerships and networks that expand availability of and access to healthful foods
- *State* and *Local* SFAs should improve nutritional quality of foods in schools, implement school-based interventions to reduce student’s screen time and develop innovative programs for staffing and teaching wellness, healthful eating and physical activity

Many of the above initiatives have been taken since the release of IOM’s study, which will be discussed in subsequent sections with emphasis on the sale of foods and beverages in school.

### **Poverty and hunger.**

Historically speaking, the correlation between poverty, hunger, and nutrition in the United States has been of consistent significance since President Johnson declared war on poverty in his first State of the Union address in 1964 (Poppendieck, 2010). Just two years prior, President Kennedy and Congress worked to amend the National School Lunch Act to authorize funding to

reimburse schools in poor areas for free meals served (Poppendieck, 2010), reflecting the indispensable need for SMPs for children particularly from low-income backgrounds. DeNavas-Walt, Proctor, and Smith (2012) reported the poverty rate as 15%, or 46.5 million people (p. 13). A study released by authors Jiang, Ekono, and Skinner (2014) as part of the National Center for Children in Poverty reported that in 2012, 45% of American children under age 18 have low-income families, with 22% of children coming from poor families. A variety of socioeconomic factors influence these statistics such as race, ethnicity, parent education, and single-parent status (Jiang, Ekono, & Skinner, 2014).

Such high rates of domestic poverty impact hunger and overall nutrition for the children in low-income households. Brown, Shepard, Martin, and Orwat (2007) wrote in his analysis of the economic cost of domestic hunger:

Hungry children haven't the capacity for normal learning and play; while their bodies are in the classroom they lack the dietary fuel required to engage meaningfully with those around them. As a result, their cognitive abilities deteriorate not because of changes in brain structure, but due to the seemingly more "benign" cause of insufficient dietary energy [...] Hungry children do less well on tests of mental ability and school performance, and are more like to fail, be held back, and drop out. They require more educational services and mental health interventions ... and also do significantly more poorly on standardized outcome measures such as academic performance, standardized testing and completion of school" (Brown, Shepard, Martin, & Orwat, 2007, p. 19).

Brown et al.'s assertions are supported by myriad studies concerning the link between cognition, school performance, and hunger. Alaimo, Olson, and Frongillo (2001) concluded in a study looking at food insufficiency's relationship to children's cognitive, academic, and

psychosocial outcomes that 6-11 year old food-insufficient children had significantly lower arithmetic scores and were more likely to have repeated a grade, have been to a psychologist, and have difficulty getting along with other children. To add, youth in the 12-16 age group were more likely to have seen a psychologist, have been suspended from school, and have difficulty getting along with peers (Alaimo, Olson, & Frongillo, 2001).

It is clear that children experiencing hunger have a unique set of needs in terms of school nutrition due to the negative effects of hunger on cognition and subsequent school performance, making the need for efficient, nutritious SMPs doubly important. Poppendieck (2010) adds that difficulty in feeding America's hungry children in schools arises from establishing a definition of "hungry" and drawing boundaries for FRPM eligibility that could limit access for children in need of free meals (p. 166). The next section goes into further detail of limitations.

### **Limitations of SMPs**

SMPs in their current form run into several obstacles regarding operations and outcomes for participating children. Limitations can be categorized as either finance- or participation-related.

#### **Finances.**

A large barrier to the provision of nutritious meals in SMPs is funding. According to a report published by the US General Accounting Office (GAO) in 2003, budget pressures and competing time demands were largely cited challenges by FSDs interviews as part of a year-long study. Introducing different, nutritious meals adds risk because a lack of students choosing to consume the subsidized meal equals a loss of revenue for the school ("Efforts Needed to Improve," 2003). The GAO also states, "Because school food authorities operate their programs on a break-even financial basis, and student meal payments make up a large part of their revenue, a decrease in meals purchased can throw their budget out of balance" ("Efforts Needed to Improve," 2003, p.

4). Other issues manifest from budgetary confines, such as schools having to sell less healthful items in cafeterias and vending machines in order to raise revenue, putting them in competition with SMPs (“Efforts Needed to Improve,” 2003).

Story, Kapinghst, and French (2006) build on the GAO’s report, discussing how SMPs have gone from largely funded by local school budgets to self-supporting in costs of food, labor, equipment, and utilities. As such, funds come mostly from à la carte sales and full-price meals and federal reimbursements for FRPM meals (Story, Kaphingst, & French, 2006, p. 113).

The GAO report also considers the role of school kitchens in SMP operation: “All or some food preparation may occur at on-site school kitchens or at central kitchens, which distribute food to satellite schools” (“Efforts Needed to Improve,” 2003, p. 6). Aside from certain grants schools can apply for on the state or federal level (Vermont Dept. of Education, 2008), schools are responsible for buying their own kitchen equipment, which is often costly and laborious in terms of transportation and installation. Outdated equipment is another problem that schools struggle to rectify due to the previously described impediments (“USDA Awards Grants,” 2014). A comprehensive study conducted in 2013 as part of the Kids’ Safe and Healthful Foods Project utilized a survey sent to schools in all states and US territories to assess “school kitchen equipment and infrastructure challenges” (Pew Charitable Trusts, 2014) found:

- Many schools rely on expensive, inefficient and unsustainable workarounds
- Eighty eight percent of school districts nationwide require at least one piece of kitchen equipment
- Fifty five percent of school districts need infrastructure changes, i.e. electrical upgrades
- Districts finance kitchen equipment via partnerships, sponsorship and low-interest loans

In Vermont specifically, Cardoso (2014) reported the following statistics:

- Sixty nine percent of school districts are serving healthy meals that meet nutrition standards
- Eighty eight percent of districts need at least one piece of kitchen equipment
- Forty seven percent of districts need kitchen infrastructure changes in at least one school
- Fifty four percent of districts need scales; fifty two percent need software for nutrient analysis and budgeting

However, largely in response to the aforementioned study on school kitchen equipment, in April 2014 the USDA announced a \$25 million award to schools to purchase kitchen equipment, a number adding to \$160 million allocated to schools for this very purpose since FY 2009 (“USDA Awards Grants,” 2014). Schools who are interested in applying for a grant can contact respective state agencies (“USDA Awards Grants,” 2014).

A related concern for school food service personnel in serving nutritious meals is technical training, which again is expensive and time-consuming for kitchen staff. Poppendieck (2010) mentions the notion of “scratch” cooking as an almost foreign concept in school kitchens she visited for research as most food service staff is not trained chefs and food preparation mostly consists of “defrost-and-heat” (p. 15). Training is required for food preparation, software training for nutrient analysis, equipment use as well as nutrition education, the last of which often requires hiring of new staff (“Efforts Needed to Improve,” 2003). Yet the National Food Service Management Institute (NFSMI) provides countless free online courses, webinars, and manuals for training that are comprehensive and retrievable from any computer (University of Mississippi, 2014). Training can also be requested for a certain school or school district and is funded by NFSMI and/or USDA’s Team Nutrition (University of Mississippi, 2014), making training tools accessible to all FSDs and food service staff.

Another concern for food service personnel on a daily basis is food waste. Buzby and Guthrie's (2002) report to Congress on plate waste in SMPs, concluding that about 12% of calories from food served as part of NSLP goes uneaten, although the survey data analyzed dates back to 1992 thus possibly not representing current conditions of schools. Cioci et al. (2010) details the waste composition of public schools in Minnesota, whose findings include over 78% of waste materials could be diverted from trash to composting or recycling (Cioci et al., 2010, p. 5) as well as the most waste generated by schools being food waste (Cioci et al., 2010, p. 6). However, studies such as this one do not necessarily draw conclusions concerning the reduction of food waste nor do they provide details of food waste specifically from SMPs. More research in the current state of SMPs could benefit food service personnel insofar as costs of food items and food preparation time.

The widely used "offer-versus-serve" approach also acts as a way to combat plate waste in which students who take reimbursable meals may "refuse some of the offered items without making the meal ineligible for reimbursements" (Poppendieck, 2010, p. 119). Food-based planning methods require three of the five offered components (e.g. protein, vegetable, dairy) and nutrient-based require two including an entrée (Poppendieck, 2010), which simultaneously works in the favor of younger children who do not require as many calories.

### **Participation.**

Student participation in SMPs has several limits, the first of which is simple: students choosing not to eat the reimbursable meal. Poppendieck (2010) addresses the issue of stigma surrounding subsidized school meals, as "... it deters some families from applying for the meals, and second, once applications are submitted and approved, it deters some children from taking part" (p. 191). Students in middle and high school can be ridiculed or teased for receiving free

school meals, which can impact their status and self-esteem (Poppendieck, 2010). In turn, students who qualify for FRPM could be putting their families at a financial disadvantage if they have to pay for meals or they may choose cheaper, less healthful à la carte items.

Perhaps the most significant block to consumption of reimbursable meals is the sale of competitive foods. The CDC defines competitive foods as those foods and beverages sold outside of the federal reimbursable school meal programs during the school day (“Competitive Foods in Schools,” 2014). The category of competitive foods includes à la carte items, items sold in school stores, snack bars, and vending machines for revenue (Story, Kaphingst, & French, 2006).

Despite the money brought in by competitive food sales, it presents what a report published in 2001 looking at foods sold in competition to SMPs called an undermining of “nutrition integrity of the [school meal] programs and discourages participation” (“Foods Sold in Competition,” 2001, p. 4). Declining participation results in decreased cash and commodity support from USDA for school meals (“Foods Sold in Competition,” 2001). The report says that competitive foods are associated with diet related health risks, stigmatization of SMPs, contradiction in terms of what children are taught is “good nutrition” and undermining of federal investment (“Foods Sold in Competition,” 2001). The report identifies several factors influencing schools’ decision to sell competitive foods: student preference, increased financial demand paired with limited resources, ‘pouring rights’ contracts with companies that acts as additional income, preparation and serving space limitations, inadequate meal periods and most interestingly, lack of education standards for school FSDs or managers (“Foods Sold in Competition,” 2001). The report (2001) discusses the little regulation on competitive foods as restricted by federal statutes.

To bring the issue of competitive food sales into present day, recent legislation under the HHFKA of 2010 established the “Smart Snacks in School” policy in order to place restrictions on the sale of competitive foods in terms of nutrition standards (“Competitive Foods in Schools,” 2014). HHFKA required the standards to be applied to *all* foods sold in schools, essentially eliminating all junk foods from competitive food sales with emphasis on “empty” calories like added sugars and solid fat with little nutritional value (“Smart Snacks in Schools,” 2013).

Another significant obstacle to participation comes in the form of eligibility for FRPM. Poppendieck (2010) sums it up in four categories: application, certification, verification and price of the meal (p. 179), as children’s families are responsible for going through this long process primarily on their own. They must first be aware that the application exists, which is the responsibility of the school to advertise (Poppendieck, 2010). The application can be difficult to navigate, and without proper knowledge of eligibility cutoffs based on income, a family may think they qualify when they in fact do not or vice-versa (Poppendieck, 2010). The process of verification can take FRPM away from students if their families’ incomes fluctuate, and something as simple as a document getting lost could determine whether or not a student receives FRPM (Poppendieck, 2010).

Poppendieck (2010) cites “the mistakes and the misunderstandings and the miscalculations” that too easily influence whether a student goes through all four stages of qualifying for FRPM due to a lack of guidance from schools and lack of education on SMPs on the part of parents (p. 183). The price of meals can also be a problem because as Poppendieck (2010) puts it, “the prices that schools charge for ‘full price’ meals vary significantly, even dramatically, from community to community, but the eligibility threshold is uniform” (p. 187). This has clear negative impacts on children’s eligibility status. To add, this process is cumbersome on the part



of FSDs who must send out, receive and keep track of associated paperwork that takes time outside of planning, preparing, serving and “counting and claiming” (Poppendieck, 2010, p. 200) subsidized meals in order to receive the necessary federal reimbursements.

Despite their limits, much is underway in terms of research, policy and initiatives to improve foods served in SMPs, yet much improvement is needed as evident by the presented literature.

### **Studies Related to SMPs**

A large body of research concerning SMPs and nutrition standards has emerged in the past ten years. Crepinsek, Gordon, McKinney, Condon, and Wilson (2009) analyzed data collected as part of the SNDA Study-III published in 2007 from a survey sent to FSDs across the country to provide menu and recipe information. Analyses of meals offered and meals selected by children resulted in most sampled schools meeting federal nutrient standards as stipulated by DGA for protein, vitamins and minerals. Fewer than one-third of the sampled schools met standards for energy from fat or saturated fat in a typical lunch, but three-fourths did meet the fat standards in breakfast. Average sodium levels in both meals were high, while fiber was low when compared to the 2005 DGA. Crepinsek et al. (2009) concluded that future policy, practice and research should focus primarily on reducing levels of fat and sodium and increasing fibers in order to align with DGA.

Fox and Clark (2009) conducted a similar analysis of data collected from the SNDA Study-III, this time looking specifically at children’s diets in school based on data collected from in-person 24-hour dietary recalls. Results found based on its national sample that while the majority of public school children in the US had nutritionally adequate diets, 80% has excessive intakes of saturated fat and 90% had excessive intakes of sodium. SMP participation correlated with overall reduced nutrient inadequacy, but correlated with increased excessive sodium intakes (Fox &

Clark, 2009). Because SMPs play an important role in US public school children's diets, the aforementioned correlations with sodium and fat intake suggest areas for improvement in SMPs.

While additional analyses have been done on data gathered from the SNDA Study-III, the SNDA Study-IV published in 2010 aligns issues associated with SMPs with the latest DGA as well as the HHFKA of 2010. SMPs are in continual transition to adhere to newly established standards, which makes it doubly important to analyze current data on the nutritional quality of SMPs including comparisons to past data sets.

Funded by USDA-FNS, Fox and Condon (2012) conducted the study utilizing a nationally representative sample of schools, analyzing SMPs compared to up-to-date federal standards during SY 2009-2010. The study compared average meals offered and served in schools to both DGA and School Meal Initiative (SMI) standards, also collecting data on competitive foods sold in schools in NSLP and SBP. Major results include (Fox & Condon, 2012, pp. 1-13):

- Student participation:

- Sixty three percent of students in NSLP schools participated in the program
- Participation rates were highest in elementary school and lowest in high school
- Student participation lower in SBP than NSLP; 28% of students in SBP schools participated

- Lunch:

- NSLP operates in 94% of US schools
- 31.6 million children are served NSLP meals every day
- Sixty eight percent are served free or at a reduced price
- Most schools offered/served NSLP lunches that met SMI standards for target nutrients; elementary schools more likely to meet standards than middle/high schools
- Schools were less likely to offer/serve NSLP lunches that met standard for calories

- Most schools offered/served NSLP that met standard for total fat or came within 10%
- Over 75% of schools offered/served lunches met saturated fat standard or was within 10%
- Few schools offered/served NSLP lunches that met *all* SMI standards
- Lunches served in schools provided one-third or more of the daily amount of grains, dairy foods and oils recommended in food patterns
- Lunches provided one-quarter of daily amount of vegetables recommended
- Lunches served 6-8% of daily amount of whole grains recommended
- Lunches high in added fat and sugar calories compared to recommended daily maximum; contributors included baked goods, flavored 1% and skim milk, pizza and condiments
- Most schools exceeded the DGA recommended maximum for sodium by more than 50%

- Breakfast:

- Most schools offered/served SBP breakfasts that met standards for target nutrients
- Few schools offered/served SBP breakfasts that met *all* SMI standards

- Competitive Foods:

- Eighty two percent of elementary schools, 95% of middle schools and 90% of high schools had à la carte items available at lunch; Fifty eight percent, 74% and 70% at breakfast
- More than 80% of school districts had ban/restriction on sweetened beverages and more than 75% had ban/restriction on snack foods

- Meal prices:

- Average prices paid for lunch represented a 21% increase since SY 2004-2005; prices paid for breakfast represented a 28% increase since SY 2004-2005

- Menu planning:

- Fifty three percent used traditional food-based, 27% nutrient-based, 20% enhanced food-based

- Meal production and service:

- Eighty percent of schools prepared food on site and 72% prepared meals for one school
- Nineteen percent used a Food Service Management Company

The summarized patterns in SMPs align with the present study. Fox and Condon (2012) note, “In January 2012, USDA issued new standards for school meals to be phased in by SY 2012-2013 [...] The data reported here, therefore, serves as marker of progress since the [SMI] nutrition standards were introduced [...] and a baseline for measuring future improvements under the new standards” (p. 34). Considering the results of SNDA Study-IV compared to the final rule on school meal patterns summarized in Table 3 reflects a federal overhaul of SMPs in the last five years that is likely to have major effects on the results of the next SNDA study. The newest standards are scheduled to be completely phased in by SY 2014-2015, the year another SNDA study should take place. However, the SNDA-IV results need still be taken into great consideration when assessing current SMPs because the data pinpoints differences between policy and practice that serve as a key foundation for identifying areas most in need of improvement.

### **Initiatives for SMP Improvement**

Raised awareness of the impact of nutrition on children’s physical and mental health has caused federal, state, and local agencies to implement initiatives both inside and outside of USDA to improve access to and quality of the food served as part of SMPs.

**Team Nutrition.**

In 1994, the USDA established Team Nutrition as a “program of technical assistance, financial support for training for school food service personnel, and resources for nutrition education in the schools” (Poppendieck, 2010, p. 79). A large component of Team Nutrition was the School Meals Initiative for Healthy Children (SMI), a reform effort launched to support improvements in school lunch and increase nutrition education in schools (“Legislative History Highlights,” 2014). Up until the enactment of HHFKA in 2010, SMI served as the agency under which reviews of school food took place to assess schools on the nutritional profile of meals. SMI reviews happened on the state level, reviewing menus and meals served during a given week at one school in every school food authority every five years (Poppendieck, 2010). Even so, SMI reviews garnered scrutiny for being too laborious for state agencies and schools and bringing up crucial questions like are the reviews at the state level representative of larger trends? Also, because schools and districts vary dramatically in size, is one school or district truly representative of all schools in the SFA (Hiatt & Klerman, p. xiv)?

HHFKA ushered in a new set of nutrition standards as well as a “unified accountability system” to address nutritional quality of SMPs through increased auditing of SFAs, establishment of criteria for school selection within each SFA and reporting of review results to the public and USDA (Jones, 2011). Thus Team Nutrition is concerned with providing a comprehensive network for food service personnel to access resources involving technical training, healthy meal planning assistance, grants to apply for, a best practices sharing center and information on local wellness policies (“Team Nutrition,” 2014). Team Nutrition also boasts a program called the HealthierUS School Challenge (“HealthierUS School Challenge,” 2014) to be discussed in the next section.

**Alternative sets of nutritional standards.**

Aside from USDA school meal patterns based on the current DGA, schools can choose to follow additional standards, and/or initiatives that help improve SMPs on many levels.

***HealthierUS School Challenge.***

As previously mentioned, the HealthierUS School Challenge (HUSSC) operates under Team Nutrition to recognize schools who have worked toward creating healthier school environments through promotion of nutrition and physical activity. HUSSC was incorporated into First Lady Obama's "Let's Move!" campaign, also introducing monetary incentive awards for those schools recognized ("HealthierUS School Challenge," 2014). Schools from all states participate with over 6,000 schools certified. Schools that are recognized not only meet all school meal requirements for NSLP and SBP, but also go above and beyond in efforts for program outreach, physical activity, community involvement and nutrition education ("HealthierUS School Challenge," 2014). They must also serving meals that reflect good planning, emphasis on fruit and vegetable intake and appeal to cultural sensitivities of the school and community population ("HealthierUS School Challenge," 2014). Twelve schools in Vermont have been recognized by HUSSC for their healthy school environments including all elementary schools in the Burlington school district ("HUSSC Award Winning Schools," 2014).

***Alliance for A Healthier Generation.***

Alliance for A Healthier Generation (AAHG) is a non-profit organization dedicated to reducing childhood obesity and empowering children to develop lifelong healthy eating habits ("Our Story," 2014). Their Healthy Schools Program is employed in over 20,000 schools in the US, which provides a science-based framework for schools to follow closely in order to make sure school food is meeting and exceeding standards that uses a six-step process: convene a

wellness council, use the Healthy Schools inventory to assess current efforts, develop an action plan based on what is important and achievable, identify resources to help implement plan, take action, celebrate success and monitor progress (“Healthy School Program,” 2014). The program also helps schools find applicable grants to apply for that will help in putting plans into action (“Healthy School Program,” 2014).

***National Alliance for Nutrition and Activity.***

The National Alliance for Nutrition and Activity (NANA) is part of the Center for Science in the Public Interest aimed at promoting healthy habits in Americans within the legislative and executive branches of government, specifically leading the effort to strengthen resources for nutrition and physical activity promotion at the Center for Disease Control and Prevention (CDC) (“National Alliance,” 2014). NANA offers resources for schools to improve policies on school meals, standards for competitive foods sold in schools and myriad more prominent issues regarding health and wellness. NANA is comprised of over 400 federal, state, and local organizations ranging from the United Fresh Produce Association to the Vermont Department of Health (“National Alliance,” 2014).

**Campaign for universal free school meals.**

Another initiative aimed at increasing access to school meals is an ongoing campaign for universal free meals, meaning that all meals are served free of charge to all students. Currently this only operates on the local level in schools or districts that choose to do so, but it has yet to gain footing on state or federal levels due to high cost and probably loss of revenue (Poppendieck, 2010). The idea has caused controversy in the political sphere because of opposing views: universal is seen as either a program for all children or a program that prioritizes poor children (Poppendieck, 2010). Yet its benefits could be innumerable if put into practice.

Leos-Urbel, Schwartz, Weinstein, and Corcoran (2013) looked at the impact of universal free school breakfast on SMP participation, attendance and academic achievement (p. 88). The study focused on New York City, as it had made breakfast universal in 2003 to all students by increasing the price of meals for students who do not qualify for FRPM. Looking at data collected from all public NYC schools over a five year span, results show a fairly small increase in participation as well as little change in academic outcomes across all schools. Leos-Urbel et al. also point to stigma (p. 103) as a potential barrier to breakfast participation despite being free.

Universal Free was first introduced legislatively in 1992 by Representative George Miller (Poppendieck, 2010). Poppendieck (2010) discusses its costliness as a relatively small price to pay compared to its long-term effects; most of the FSDs she interacted with for her research supported the idea because it would ultimately generate savings by “removing the burden of determining eligibility, certifying, verifying and counting and claiming (p. 289). She concludes that it would improve “a benefit already received by millions of poor children by removing stigma and improving the quality and simultaneously assisting ‘near-poor,’ lower-middle- and middle-income families, who are feeling mounting stress in the current economy” (Poppendieck, 2010, p. 290). Policymakers will continue to debate costs and benefits.

### **Farm to school.**

The Farm to School (FtS) movement has taken root across the country insofar as schools locally sourcing food products and often incorporating educational activities concerning nutrition and agriculture. USDA defines FtS as the following (“Farm to School,” 2014):

- Efforts that bring local or regionally produced foods in school cafeterias
- Hands-on learning activities – school gardens, farm visits, cooking classes
- Integration of food-related education into regular, standards-based classroom curriculum



USDA supports FtS through research, training, grants and technical assistance including the FtS Census conducted in 13,000 public school districts across all states during SY 2011-2012 (“Farm to School About the Census,” 2014). The succeeding table summarizes data gathered nationally and that gathered in Vermont (“Farm to School Census Overview,” 2014):

**Table 5** – FtS Census SY 2011-2012 national versus Vermont results

	National	Vermont
FtS Participation (%) <sup>13</sup>	43	86
Investment in Local Purchases (%)	14	9
Most Common Food Product	Fruits	Vegetables
Edible School Gardens (%)	13	61

The National FtS network also serves as an extensive resource for those engaging in or interested in FtS activities. It includes resources for getting started, best practices, news and related policy updates at local, state and federal levels (“Farm to School Network,” 2014). The numbers continue to grow in terms of FtS participation across the US.

### **Initiatives in Vermont.**

The state of Vermont has a unique agency by which FtS initiatives are put into action: Vermont Food Education Everyday (VT FEED), an organization run as a partnership between Food Works at Two Rivers Center, Northeast Organic Farming Association of Vermont and Shelburne Farms (“Vermont FEED,” 2014). VT FEED published a report in 2004 to bring its functions to light in order to “quantify current, and potential, local food purchasing by schools in Vermont” (p. 4). The researchers offered a comprehensive overview of where schools in Vermont are purchasing local products and the overall costs. The study surveyed FSDs and food distributors all of whom were already working with VT FEED. The evaluators also gathered data

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<sup>13</sup> Percentages based on sample size.

from the primary groups of interest in the year 2003 and again in 2004 to determine whether schools' purchasing of local products had changed since working with VT FEED.

The study's results show that across Vermont, schools have the same issues in terms of factors that influence overall school food budgets: "health insurance, benefits, and equipment costs" (VT FEED, 2004, p. 13) were the most common. All schools in the study purchased produce from one primary distributor, most of which were local in respect to the school or purchased through the federally funded DoD Fresh Program or the Burlington Food Service Company. The researchers categorized produce distributors as one of the following: direct local farm purchases, local distributors, or USDA Commodity Foods (non-local). Direct farm purchases represented the least used means of acquiring produce.

FSDs listed motivations for purchasing or wanting to purchase local foods including belief that local is more fresh as well as local interest and demand in buying local driven by students, parents and community members (VT FEED, 2004, p. 19). Barriers for purchasing local foods included a belief that variety and availability can be limited based on seasonality as well as higher cost of local food items. The directors said that local purchasing could be made more of a possibility if more kitchen and storage space was available for preparation and increased awareness of where food is locally grown. The researchers calculated that around 10% of fresh produce served was sourced locally in this sample of Vermont schools. However, they also found that schools that had been working with VT FEED for a year had increased overall purchasing of fresh produce.

Comparing prices of local and conventional food served in schools shows, "local and direct farm vegetables are often comparable to, or even sometimes cheaper than commodity vegetables

or those sold by the Vermont distributors” (VT FEED, 2004, p. 26), which has lead VT FEED to look into the possibility of schools purchasing local produce via DoD Fresh.

VT FEED has worked with one-third of Vermont schools to date. Its staff work directly with schools, farms and food distributors to increase FtS efforts and they sponsor a variety of programs and events to gain community awareness and involvement. They also provide tools and resources for schools implementing FtS such as guidebooks, current research and news related to FtS in Vermont. This includes the New School Cuisine Cookbook put together by Vermont food service personnel and the Health, Wellness and Nutrition Guidebook assembled by schools from all around the state (“Vermont FEED,” 2014). The kinds of initiatives happening in Vermont narrow the lens through which to assess SMP access, nutritional quality and improvement to the state level.

## **Present Study**

### **Research Purpose and Focus**

Within the larger context of SMPs across the country, the focus of the current study shifted from a research question based on SMP variation in adherence to federal dietary guidelines to the ways in which Vermont schools and childcare institutions choose to administer SMPs in order to meet the federal guidelines for school nutrition as well as how they differ despite being held to the same standards. The study is therefore descriptive in nature and its purpose can be divided into multiple component parts in relation to SMP functions at the *state* level: (1) to extract patterns from data results when comparing individual SMPs to their counterparts, (2) to analyze identified factors that affect individual SMP operations, (3) to ascertain levels of access based on foods served, utilized food sources and other relevant resources, (4) to gain understanding of initiatives taken to enhance SMPs on federal, state and local levels and (5) to delineate further

areas for exploration in the realm of SMP improvement. The intentional absence of a hypothesis leaves the interpretation of data results open to shifts in examining all parts of the study.

### **Design and Methods**

A quantitative approach has been chosen for this particular study. More specifically, I used descriptive statistics to measure school food service operations and resources utilized to supplement SMPs. I collected quantitative data via a cross-sectional survey of FSDs in the form of a self-administered online questionnaire through SurveyMonkey®. Essential questions were drawn from the SNDA Study-IV and adapted to fit the state population. The survey gathered information on how individual schools use the USDA-FNS resources provided for food products as well as how they reach beyond typical resources (e.g. FtS programs) in order to provide quality foods in SMPs.

The survey consists of 28 questions including close-ended one-answer, closed-ended multiple-answer, ranking, number- and percentage-specific questions, open-ended (listing) as well as a comment box asking for suggestions. The survey in its entirety can be found in Appendix A. It is designed to gather data from a large sample in order to gather an account of what Vermont schools include in their SMPs to meet the standards delineated on federal, state and local levels.

Survey results were statistically analyzed to look at how school districts within certain regions Vermont choose to deliver SMPs. Statistical analyses were mostly descriptive so as to organize and summarize raw data gathered from the survey. The data was then coded and analyzed for patterns through the use of the IBM Statistical Package for the Social Sciences (SPSS) statistical tools to summarize and visually describe the data. Measures of central tendency for each targeted nutrient and key food group were calculated based on the data

gathered from FSDs, i.e., mean, mode, range, and standard deviation. Additionally, survey questions were evaluated to calculate frequencies (percentages) of FSDs' answers to move toward identifying patterns in SMP administration.

An additional component of this study was to gather photographic evidence from six schools in two different local school districts. The schools were purposefully selected based on two criteria: FSDs who responded to the survey and those who worked for large school districts that would represent diverse populations in the state. Each FSD selected three schools from their respective districts for photographs including one elementary school, one middle school, and one high school for cross-comparisons. A basic digital camera was used to take photographs of the meals served in schools to depict meals served as part of NSLP and SBP in the school's cafeteria on a typical day. The results were used to corroborate what FSDs reported in the survey. Pictures include each whole meal, à la carte products, and other supplementary options (e.g., salad bar).

I utilized similar descriptive statistical analysis techniques on the photographic data gathered, albeit on a much smaller scale due to the small sample size. The differences in data sets gathered from each of the six schools used for photographs were analyzed similarly to compare food items served in the cafeteria on a daily basis between districts and school levels (e.g. elementary versus high school options).

The two data collection methods allowed for further investigation into SMPs in Vermont by way of insight into schools and qualifying childcare institutions interpreting and implementing federal guidelines for school nutrition essentially on their own. The use of multiple methods helped to strengthen the findings from the survey and show firsthand the kind of variety found in foods served as part of SMPs.

**Procedure and Data Collection**

The procedure began with the survey leading into the photographic component of the study. The primary group of interest was FSDs for the purposes of this study. After the survey was assembled and refined, I procured a list of FSDs from the Vermont Agency of Education's Child Nutrition Programs office from which to draw participants. The list consisted of exactly 100 FSDs that covered every county/district in Vermont school systems, plus an additional 13 I acquired from FSDs who had individual managers for each of their institutions. I sent individualized invitations to FSDs requesting their participation in the survey via e-mail along with an explanation of the study. The survey was sent out in early February 2014 allowing a two-week initial period for responses, after which a reminder e-mail was sent out and an additional week was taken to yield a higher response rate. I made clarifications as needed if participants had questions by e-mail. I then chose two FSDs to contact in regards to the photographic element of the study, explaining this second part of the study and ensuring anonymity. Both responded promptly and we were able to set up times to visit three schools in each of their districts.

After analyzing the quantitative data for themes and patterns, I arranged visits to spend time in each of the six schools during lunchtime because it is the busier of the two mealtimes with more food options. Over a two-week period I made said visits to the schools to observe students buying meals in each cafeteria and to see the schools' kitchens. I took photographs of the meals served as part of NSLP as well as whatever other offerings were available a la carte.

I analyzed photographic data after all visit days were completed. Analysis included coding each food item on a typical tray for frequencies and included information on food sources (e.g., local). I collected some additional data and subsequent analysis concerning students' food

choices, i.e. a particularly popular food choice. Some visits allowed time to keep track of how often the subsidized meal was chosen versus a la carte options.

### **Data Analysis**

The overall data collection process took approximately six weeks for both methods. Data analysis began three weeks into the process using the descriptive statistics aiming to generalize about access to food sources, nutritional value, and the resources schools and childcare institutions in Vermont choose to take advantage of to improve SMPs. Analysis consisted of looking closely at patterns in the data and identifying factors influencing the kinds of resources schools and childcare institutions utilize for SMPs in relation to school demographics. Although data cannot be generalized to the state, it serves as a marker for understanding SMP functioning on the state level.

## **Results**

### **Survey**

Thirty-nine FSDs responded in the three week period allotted, or 35% of FSDs contacted. Survey results are divided into categories by which to describe and compare Vermont schools and qualifying childcare institutions: (1) population characteristics, (2) food sources, (3) menu planning, (4) SMP improvements based on federal standards, and (5) overall experience of food service management.

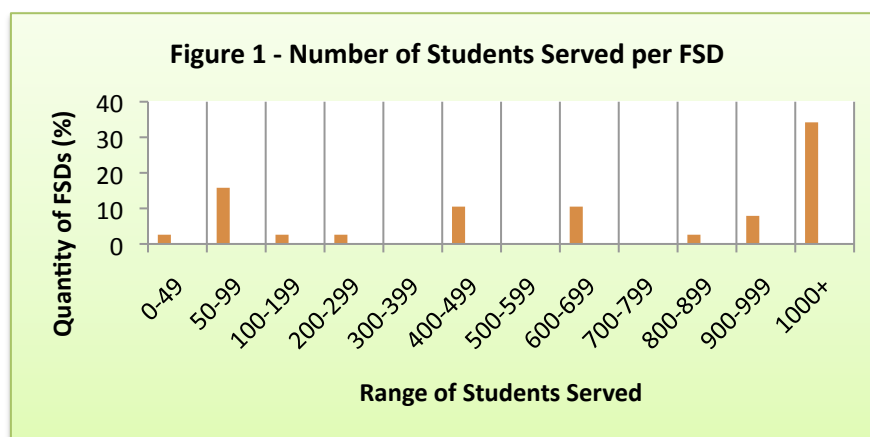
#### **Population characteristics.**

41% of respondents serve a single institution, with 10% of all respondents serving an alternative childcare institution (e.g., juvenile detention center, youth center). The remaining 59% of respondents serve between two and 11 institutions ranging grades Pre-K-12. Thirty six percent of respondents manage one or more school districts including all grade levels. Twenty

one percent of respondents manage schools or childcare institutions that serve grades K-8 only. Less than 1% of respondents manage only high schools.

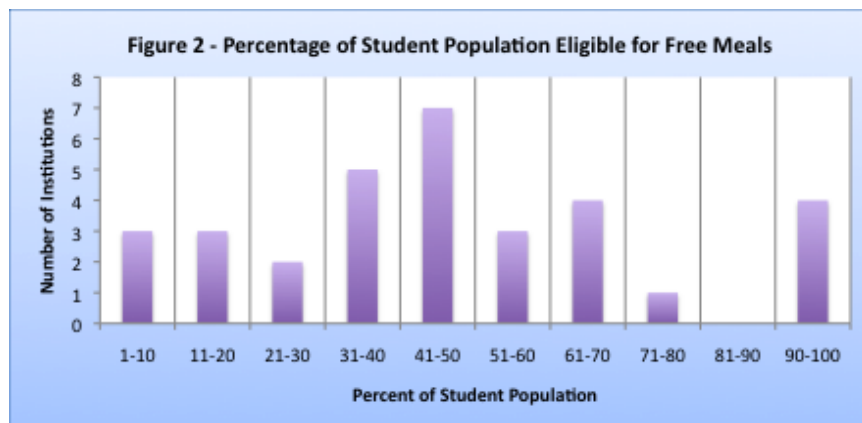
The number of children served per institution/district varies from less than 50 to over 1000.

Figure 1 demonstrates the range of students served per FSD.



Due to the recent elimination of the reduced price category for FRPM in Vermont, only percentages of students qualifying for free meals were reported by FSDs. Figure 2 shows percentages of student populations eligible for free meals, the most frequently occurring being 41-50% of total students. It is important to note that the 90-100% range is comprised of four respondents that serve all meals free to all students in their respective institutions and districts. Otherwise the range of students eligible for free meals varied from less than 2% to more than 80% with a mean of 47% and standard deviation of approximately 30. A report published by the Vermont Agency of Education in 2014 reports the statewide average of students eligible for free and reduced price meals as 40.67% of students enrolled with a range of 0-100% per supervisory union (“Percent of Students Eligible,” 2014). The mean is therefore closely reflective of the reported state average.

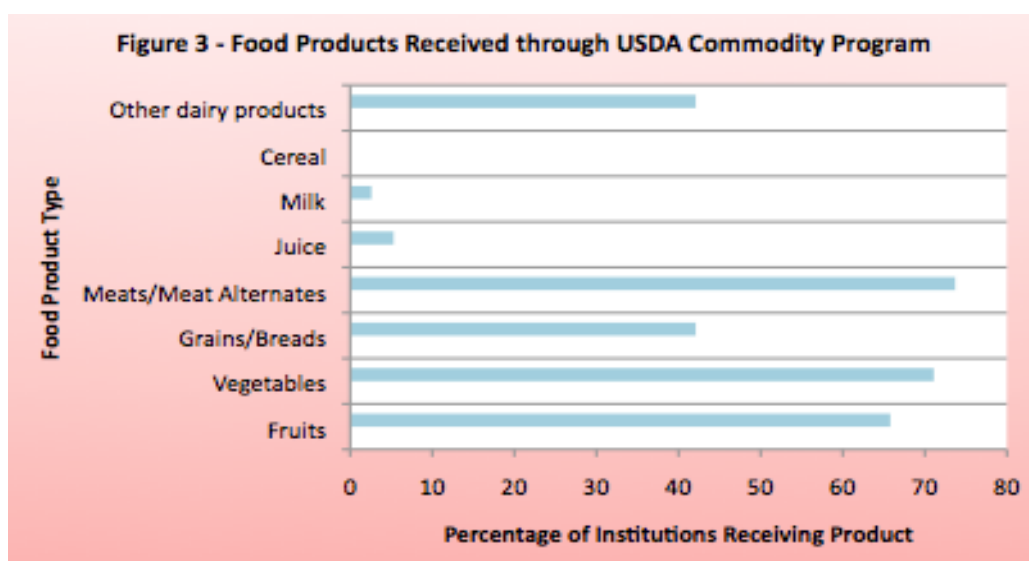




The characteristics of participating institutions and districts is therefore incredibly varied in terms of student population served and percentage of students eligible for free meals.

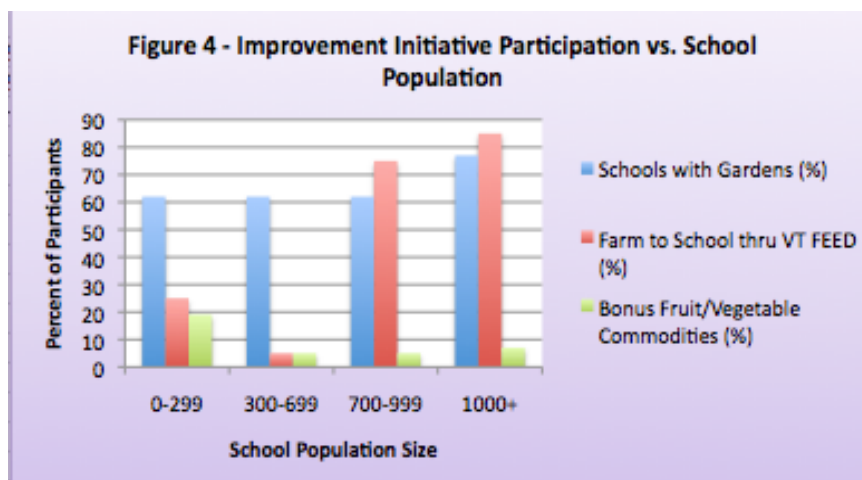
### **Food sources.**

The literature substantiates all participating institutions in SMPs purchasing foods in bulk at a reduced price through the USDA's commodity program. Figure 3 reflects the frequency of food types received through the program reported by respondents. The three most frequently purchased food types are as follows: (1) meat/meat alternates, (2) vegetables, and (3) fruits. The specific number of fruit and vegetable food products received as commodities ranges from two to 17; the most popular are canned or frozen peaches, pears, broccoli, carrots, and applesauce.



Bonus commodities received through programs like FFVP and DoD Fresh, FtS and school garden participating are grouped under food sources, but also function as SMP improvement initiatives for the purposes of the present study. As food sources, 50% participate in FFVP and 45% participate in DoD Fresh to provide SMPs with additional produce. Thirty seven percent receive federal funding to implement FtS efforts and 53% work with VT FEED to coordinate FtS. Of those institutions that report FtS efforts taking place, they receive food products from two to 14 local and regional farms and/or vendors. Fifty eight percent have active gardens on the premises from which produce is used in school meals. Despite this large percentage, less than 10% of institutions with gardens receive any kind of government funding for them (e.g., local, state, or federal).

Figure 4 illustrates the differences in institution(s) population size compared to the kinds of supplemental food sources taken advantage of: one local source (school gardens), one state source (FtS through VT FEED) and one federal source (bonus commodities through FFVP and DoD Fresh). Larger institutions rely more heavily on FtS than do small institutions as evidenced by the data. Institutions of all sizes utilize school gardens at similar rates. However, bonus commodity programs like FFVP and DoD Fresh are used infrequently across all population sizes, the highest percentage of which takes place in institutions serving less than 300 children.



### Meal planning.

Because it is a transition year for participating institutions to shift their programs to meet federal standards, meal planning across Vermont institutions takes many different forms. Fifty three percent of respondents use Traditional Food-Based menu planning, 21% use Enhanced food-based, and 13% use the Nutrient Standard method. Twenty six percent of respondents contract out to an FSMC for menu planning and food purchasing purposes, 80% of whom have contracts that include local food products. Eighty percent of those who use an FSMC delegate menu planning exclusively to them, with the remaining 20% sharing the responsibility with the institution's food service personnel. It should be noted that 40% of the respondents who contract out to an FSMC use the same company; these respondents work directly for the FSMC and are in charge of entire districts, sometimes more than one district. Some institutions also choose to follow alternative sets of nutrition standards, as explained in the literature, in addition to those stipulated by DGA and HHFKA. Three percent of respondents report following the NANA guidelines, 16% follow the Vermont Nutrition and Fitness Policy Guidelines, and 26% follow the HealthierUS School Challenge. 29% reported that the supplemental standards are not

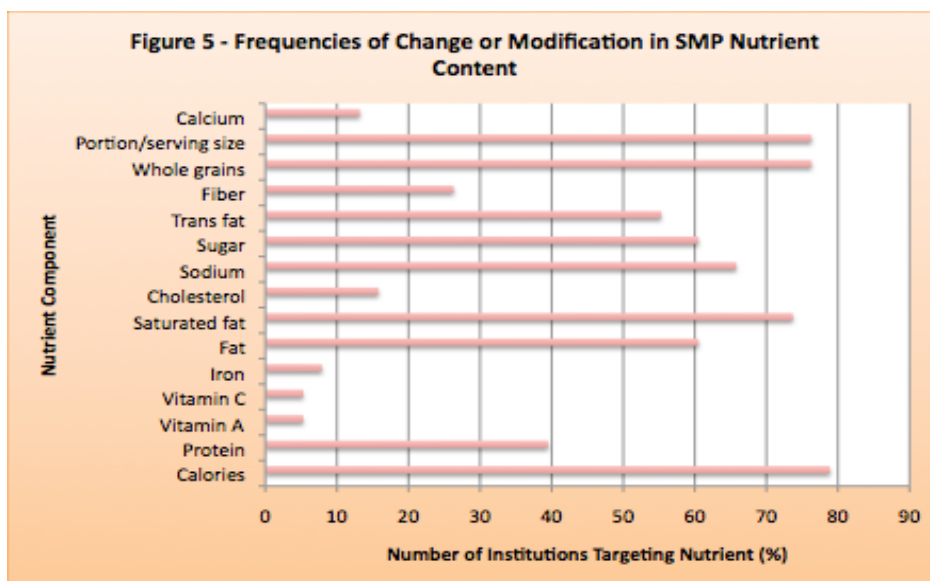
applicable to their respective institutions. Three respondents specified standards that are outliers; one FSD reported having district-specific guidelines (e.g., no trans fats, no artificial sweeteners).

The literature does not reveal any negative effects of working with FSMCs or using nutrient standard versus food-based menu planning, only that the variance in menu planning methods as seen in the data results shows that schools are still transitioning to new standards requiring schools to completely switch over to food-based. The presence of variability reflects a larger issue with what is expected of institutions, and why so often food service personnel choose to contract out to an FSMC to lift the administrative burden from their staff.

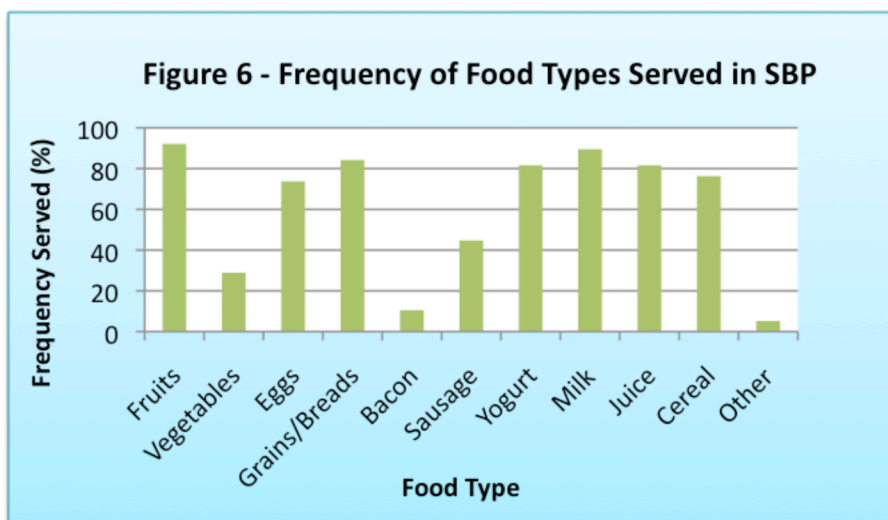
### **Improvements based on federal standards.**

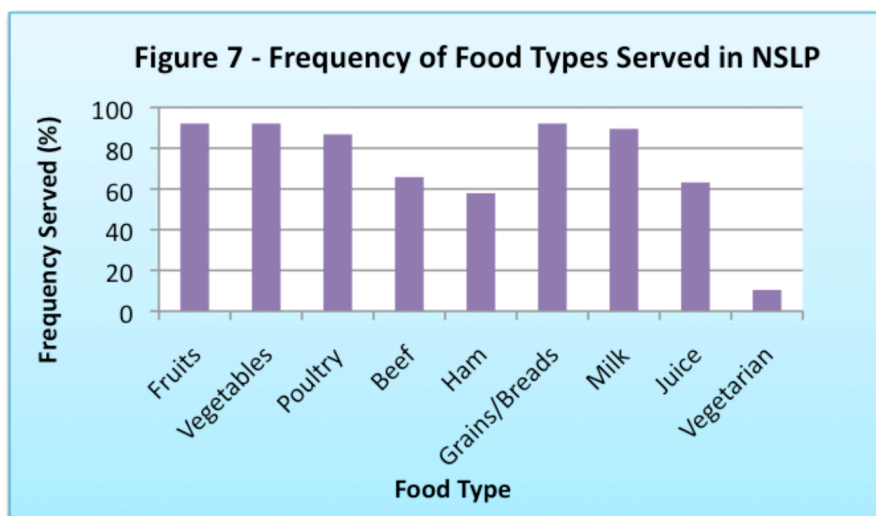
There is variability across Vermont populations in regards to recent improvements made to SMPs and general nutrition policy in schools, much of which is based on the new meal pattern standards. For instance, 71% of FSDs report that their district has a local wellness policy, 5% do not have one and 16% are unsure. Of those who do not or are unsure of local wellness policies, 25% work for alternative childhood institutions (e.g., juvenile detention center, family resource center) that operate outside of a school district. Twenty three percent of those with local wellness policies said their policies include nutrition standards for food and beverages in school meals that exceed federal requirements.

Ninety seventy percent of respondents reported making changes and/or modifications to their school meal recipes to adjust calorie and nutrient content in the past five years the federal standards demand when nutrient requirements change; the remaining 3% did not respond or were unsure. Figure 5 shows the frequency of modification based on specific nutrients targeted for improvement. The five most frequently modified areas are calories, portion/serving size, whole grains, saturated fat, and sodium.



When asked to share a typical breakfast menu served as part of SBP during SY 2013-2014, popular food types include fruits, cereals, grains, and milk. For lunch served as part of NSLP, the food types most often offered are fruits, vegetables, grains and milk. Figures 6 and 7 depict the frequency of food types reported as part of SBP and NSLP respectively.





### Overall experience of food service management.

Perhaps the most interesting of information gathered from the survey is the challenges FSDs face in SMP operations. When asked to rank aspects of school food service from most to least challenging, the following two aspects came up as most challenging in the majority of cases: (1) modifying breakfast and lunch menus when federal standards change and (2) receiving adequate reimbursement for subsidized meals. Table 6 exhibits the frequencies of each of the seven categories being ranked, one being the least challenging and seven being the most challenging.

**Table 6 – Frequencies of SMP components ranked from least (1) to most challenging (7)**

	1	2	3	4	5	6	7	N/A
Working with local farms and vendors	3%	11%	14%	11%	26%	17%	11%	6%
Receiving adequate reimbursement for subsidized meals	26%	15%	14%	3%	6%	11%	14%	11%
Adhering to Vermont school nutrition standards	38%	17%	6%	3%	11%	14%	9%	3%
Adhering to district wellness policy for school nutrition	6%	17%	26%	34%	9%	3%	3%	3%
Serving nutritious meals students will eat	9%	23%	17%	6%	14%	3%	11%	17%
Modifying menus to reflect changing federal guidelines	9%	11%	11%	23%	14%	17%	11%	3%
Meal planning to meet federal guidelines	9%	3%	10%	17%	14%	26%	17%	6%

The results of ranking demonstrate another instance of great variation in terms of what FSDs find most challenging based on individual experiences with school food service. By and large, adhering to Vermont standards for nutrition is not something FSDs generally find challenging. Meal planning to meet federal standards, on the contrary, is ranked in higher positions. Receiving adequate reimbursement also came up as more challenging than other SMP components, although what FSDs find most challenging to deal with is spread across all categories.

The part of the survey asking for FSD's suggestions for SMP improvements yielded fascinating results. Twenty of the total respondents provided suggestions. Table 7 summarizes their responses.

**Table 7** - Suggestions for SMP administration improvement

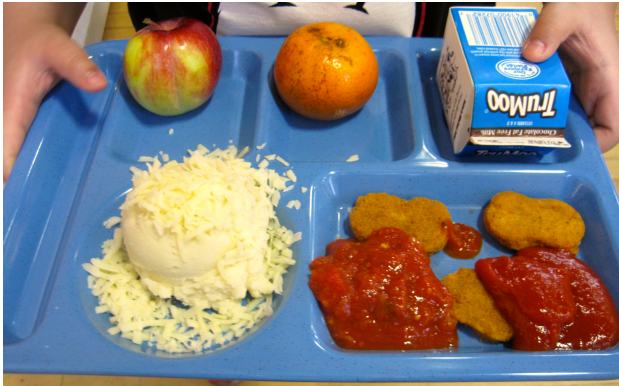
Category of Suggestion	Number of Suggestions (% of total)
Increased funding	30
Providing meals children will actually eat	15
Universal Free	10
Less administrative burden	10
Access to better quality food sources	10
Integrating nutrition into curriculum	10
Changes needed in nutrition standards	5
Expanding nutrition education to parents	5
Expanding access to local produce	5

## Photographs

I took photographs of school lunches in two large school districts (1000+). District A is comprised of ten schools under one FSD; District B is comprised five schools under one FSD. District A serves all lunches free to all students, but still charge for breakfast and other meal components. The following photographs are representative of what I label “typical” reimbursable school meals because they each include at least three of the five stipulated food groups in the



new school meal patterns. Table 8 shows the typical reimbursable school lunches for each school compared to the school meal patterns required by the 2012 Final Rule on nutrition standards.



MEAL 1 – District A Elementary School



MEAL 2 – District A Middle School



MEAL 3 – District A High School  
(NOTE: Student holding milk carton)



MEAL 4 – District B Elementary School



MEAL 5 – District B Middle School



MEAL 6 – District B High School



**Table 8** – Sample school meals compared to school lunch patterns (2012)

	Elementary (K-5)		Middle (6-8)		High (9-12)	
Food Group	<i>Meal 1</i>	<i>Meal 4</i>	<i>Meal 2</i>	<i>Meal 5</i>	<i>Meal 3</i>	<i>Meal 6</i>
<i>Fruits (c)</i>	Yes	Yes	<b>No</b>	Yes	Yes	<b>No</b>
<i>Vegetables (c)</i>	Yes	<b>No</b>	Yes	Yes	Yes	Yes
<i>Grains (oz)</i>	<b>No</b>	Yes	Yes	Yes	Yes	Yes
<i>Milk (c)</i>	Yes	Yes	<b>No</b>	Yes	Yes	<b>No</b>
<i>Protein (oz)<sup>14</sup></i>	Yes	Yes	Yes	Yes	Yes	<b>No</b>

The typical meals depicted above generally meet the school meal patterns for lunch. Meals 3 and 5, from a high school and middle school respectively, included all five components. All schools participate in the offer-versus-serve approach in which students must pick three of the five offered components to eat. Food service staff in District B made it clear to me that they monitor all students' plates before they sit down to eat in order to ensure they have the necessary components on their trays. Four of the six meals do not include competitive foods except Meals 4 and 6, both high schools, that include cookies and lemonade. Additionally, District B Middle School had a large array of foods available à la carte that students paid for outside of the reimbursable meal. All of the schools had fruit and salad bars, as reflected in the abundance of vegetables in all meals. Processed foods are present in Meal 1 (chicken nuggets), Meal 4 (frozen fruit cup), and Meal 6 (cookies).

Overall, the sample meals offer a variety of healthful foods, but also support the survey data in terms of variability in what institutions serve in reimbursable meals. Much of the food is healthy, some is processed, and à la carte items are sold in large quantities to supplement the regular meals. The photos show that schools are meeting the standards, but the variety reflects the kind of autonomy schools have to determine how to meet them. This combined with the offer-versus-serve approach used in all of the schools brings up the issue of whether or not children are

<sup>14</sup> Protein included because it is heavily emphasized in DGA.

getting what they need in terms of nutrition. The photographs verify the notion that despite institutions serving many different kinds of foods, it is the students who ultimately decide what to eat. If they are given the freedom to pick parts of the reimbursable meal and/or competitive foods, then proper nutrition is not guaranteed. However, the meals pictured above indicate that children, particularly older students, are capable of making healthy choices that will benefit them in both the short and long term. This is where education both inside and outside of the classroom is important for promoting healthy eating habits and exposing children to a variety of foods.

### **Discussion**

The literature, survey, and photographic results all show that the standards by which qualifying institutions operate are constantly in flux. The history of NSLP and SBP encompasses the perceived role of schools not only in the realm of education, but also public health and social equality. School nutrition is a public service, and as such legislation like the Child Nutrition and WIC Reauthorization Act and the Healthy Hunger-Free Kids Act incorporate nutrition education, food safety, nutrition value, and welfare for families who otherwise cannot afford the service.

The fluctuating role of the government, too, manifests in the Dietary Guidelines for Americans as the determinant of a proper diet for its citizens. Moreover, states are given the job of primary commissioners of school meal programs and often include an additional set of meal standards for institutions to follow (see Table 4), while local school food authorities also hold specific responsibilities in the administration of the programs such as food purchasing and meal planning to meet both sets of standards. The state is now required to perform audits every three years to ensure the quality and legitimacy of SMPs, yet these inspections only take place in one institution per district that likely will not be audited again for years. Thus a systemic breakdown occurs when considering accountability for SMP operations on federal, state, and local levels. It is

difficult to determine who is ultimately accountable for the provision of nutritious foods to schoolchildren. Those in charge of school nutrition at each level do indeed work together to a large extent, yet the discrepancies – in food sources, participation in supplemental programs, local improvement initiatives, kitchen facilities, and the aspects of food service FSDs find challenging – are far too great to ignore.

The literature significantly shaped the analysis of my survey responses to focus on how SMPs work on the state level because research is concentrated heavily on large national studies like SNDA as well as studies on a specific school, district, or region. The degree of autonomy states have to influence SMPs begets understanding of how differences between regions, districts, and institutions within the same federal and state parameters impact the design and implementation of SMPs at the local level. Influential studies such as SNDA Study-IV and those analyzing certain data sets from previous SNDA studies show that participating institutions meet the majority of recent standards for school nutrition. However, nutrient content areas such as sodium, added fats, and sugars continue to present a challenge for food service personnel in meal planning nationwide.

This presents problems when taking the ever-changing federal standards into consideration. Institutions are expected to keep up with modifications that often take a whole school year or more to put into place. For example, while many institutions in Vermont are using food-based menu planning per the standards, some are still using the nutrient standard method despite the requirement to change. Nutrient standard planning is historically a financial commitment because of the software and training needed to use it, so institutions will not quickly give up an effort in which they have poured time and energy. Additionally, Figure 5 shows calories, whole grains, portion/serving size, and saturated fat as the areas most often altered in SMPs in Vermont.

Saturated fat, calories, and portion/serving size are all nutrition contents that must be reduced rather than increased. Whole grains must increase to align with standards, and this is a relatively easy change to make compared to increases in fruit and vegetable consumption in terms of cost, food safety, and preparation. The literature and survey results therefore reflect a focus at the federal and state level to *reduce* less nutritious content rather than *increasing* healthful nutrients and foods because it is less costly and less time consuming to take away rather than add content for FSDs who must direct their attention to financial and time-related issues on top of the nutritional aspect of SMPs.

The characteristics of a school, district, or regional population also contribute to SMP functioning as seen in Figure 4. Respondents who serve a small population are in primarily rural areas in Vermont because the larger districts are concentrated in suburban and urban areas. This includes variability of the proportion of students eligible for free meals as seen in Figure 2. The institutions with highest proportions (e.g., free for all students) were those with the largest populations in urban/suburban areas. Local district wellness policies, too, are not established in all districts, but they are steadily increasing as per the standards.

Figure 4 shows an even concentration of school gardens across different population sizes. A large difference exists between small and large populations in the utilization of VT FEED for FtS; this is not to say the smaller schools are not engaging in FtS, only that if they do it is an independent effort. Bonus commodities in the form of FFVP and DoD Fresh are rarely taken advantage of in any population, which brings into question the functionality of employing these federally funded programs. The USDA boasts their effectiveness and ease of implementation in improving consumption of fresh produce in schools, but the present statistics show these

programs are limited in their scope, and the application process for each is a probable extra burden for FSDs with other priorities.

The rates of usage for alternative sets of nutrition standards significantly differ as well. It is particularly surprising that only 16% report following the Vermont Nutrition and Fitness Policy Guidelines given that this is technically required of all institutions. Although respondents could have mistaken the title of the guidelines for something else, the low percentage reflects a need for Vermont's nutrition standards to be more widely communicated to FSDs if institutions are to be expected to follow their standards for competitive foods sold outside of SMPs as shown in Table 4. Low percentages for other sets of standards like NANA and HUSSC show a similar need for more promotion of the organizations as free services, resources, and incentives for institutions to use in planning SMPs rather than onerous practices.

The photograph component of data analysis supports evidence of the kind of varied sources and practices institutions use in SMPs in both the literature review and survey results. As with any large social issue it is important to reconcile all of the political complexities associated with rules on SMPs with what actually happens on the local level for children and those who plan and make their food. The photographs compared to school meal patterns reflect a need for the patterns to be revised due to some students missing key nutritional components from their plates because they are not required to take an item from every food group.

Although the offer-versus-serve approach benefits SMPs by limiting food waste, this could cause major nutrition imbalances if children are consistently skipping certain food groups. However, monitoring children's consumption brings up the question: to what extent is it appropriate to regulate what students put on their plates? The typical meals shown in photographs convey abundance of food on students' trays, but do students eat all of it, and are they getting

what they need? One food service staff member at District B High School told me to glance into the compost bins to see how much food is thrown away, and the amount of food I saw wasted from high school students was shocking.

When considering the definition of “good” nutrition as described in the DGA, photographs like that of Meals 1 and 4 contradict what we as nation preach as healthy foods. Do mashed potatoes drowned with cheese, processed chicken nuggets, and French toast count as healthy eating? These items were all served in elementary schools, likely due to food service staff needing to serve foods children will actually eat, cost-effectiveness, and preparatory limitations (e.g., kitchen space, equipment, time between meals). What can be done on each administrative level to improve factors like cost, food preparation and serving foods children like should be determined by the needs of those who actually make the decisions: FSDs.

What FSDs find most challenging in SMP operations varies greatly, showing that everything FSDs deal with presents different kinds of challenges, and that these variations are influenced by differences between population characteristics such as how many children are served under one FSD (e.g., multiple districts under one FSMC professional staff member, the FSDs in each of the large districts used for photographs). Because each SMP aspect presents challenges to different FSDs (see Table 6) even across similar population sizes, the differences between districts suggests a need for more uniformity in how SMPs are meant to operate: monitoring, accountability, and guaranteeing the same access to available resources for all children and food service personnel. This is not to say schools and institutions should not maintain a sense of uniqueness in terms of individual initiatives to improve SMPs, but rather initiatives on the federal and state level should be more publicized and encouraged so as to increase access to healthy food and resources for FSDs to bring SMPs to similar levels of success.

In terms of state administration of SMPs, Vermont is unique in its awareness of the effects of nutrition on health and well-being. The rate of participation in initiatives like FtS and gardens on school premises is not representative of the country as a whole. Statistics from the Farm to School Census, for instance, depict a range of participation in FtS efforts and school gardens; the most highly concentrated areas reside on each US coast (“Farm to School About the Census,” 2014). While resources such as the FtS Network exist to connect schools all over the country, more must be done legislatively to increase improvement initiatives if participating institutions are going to even out. This is key for increasing access for *all* US schoolchildren to good nutrition.

Differences in state and local administration of SMPs are the determinants of what children and food service personnel are able to access, making federal legislation the only true route to equality in that respect. Offering universal free to all children, for example, may be a far off solution, but it should not be dismissed due to costs or burden because the current situation is not effective in guaranteeing all children the same access to nutritious foods as boasted in the most recent federal legislation. Schools may be generally meeting standards, but what is served (i.e., processed chicken nuggets) does not always match up with what experts define as healthy eating.

What the myriad controversies, changing policies, and differences in access surrounding SMPs in the US boil down to is a political issue. I have heard the standards being criticized on multiple occasions for increased federal involvement in local schools, yet schools need to be held responsible for providing nutritious foods. Federal standardization for school meals can be compared to the Common Core education curriculum implemented in schools on a national scale in the past few years. Although established as the primary means to guarantee equal quality of education to all children, the Common Core has also been largely criticized for its strict requirements and the demanding nature of accompanying standardized tests that do not cater to

children's diverse learning needs (Baker, 2014, para. 18). School districts are given autonomy to choose and design curricula that aligns with the Common Core standards, and yet student performance falters when said curricula asks too much of students at a young age, often those who struggle the most academically and/or do not speak fluent English (Baker, 2014, para. 24). In the same respect as Common Core, it will be vital in the coming years to track how schools measure up to the new standards in order to formulate better future requirements and practices for institutions participating in federal school meal programs, always making the students' needs the first priority of any and all efforts. Effective federal action is possible, but must be closely monitored, tested, and adjusted to move towards equality for all American schoolchildren.

### **Implications for Future Research**

Future research on SMPs should include qualitative methods to assess what FSDs need in terms of support, funding, and programs to supplement meals that are accessible to all types of schools. Their voice is largely unheard in the political sphere and their opinions are crucial to improvements in SMP management.

Deeper investigations should be conducted on the comparison of improvement initiatives and accessed resources for meal planning among schools and districts, taking demographics such as the percentage of students eligible for FRPM into account. More detailed studies on SMP administration at the state level such as this one would aid in understanding differences from state to state such that those on the federal level of decision making can make more informed decisions on particular allocations of grants and funding and where standards should be tightened and/or loosened to promote access to healthy school meals across all populations.

Research on the benefits and costs of Universal Free meals on a national scale is necessary to understand the full scope of its implementation on the national level. Additionally, case studies



must take place in schools and districts who have successfully established Universal Free in their cafeterias, which should be completed in regions that differ demographically (e.g., rural versus urban) to reflect the diversity of American schools and qualifying institutions. Thus far research is limited on Universal Free successes. If schools or districts have found little or no success in using Universal Free as a practice, inquiry into the reasons behind its failure will contribute to the body of research that either supports or opposes the feasibility of Universal Free on a national scale. Such research could take place in several Vermont schools and districts.

### **Limitations**

There are several limitations to the methodology that were apparent when designing this study, the first being the presence of response bias in the FSD survey answers. Individual respondents may have omitted certain information or chosen to answer open-ended questions in such a way that the potential misinterpretation of data could affect the findings and conclusions drawn from survey results. Bias present may manifest in what FSDs chose to include and omit to promote the quality of their respective schools' SMPs.

A second limitation is the sample size, including instances of attrition and incomplete survey responses that were deleted from the database because of statistical inconsistencies. While a one-third response rate is fairly large, it still does not provide a representative sample of Vermont from which to draw conclusions.

Another limitation is the presence of inaccurately interpreted data due to some items being hard to code and/or extract patterns from because respondents filled out questions incorrectly or their answers to open-ended questions were unclear. Some outliers occurred in the survey data for questions requiring an open-ended answer such that they could not be categorized or explained in relation to relevant data patterns.

An unexpected limitation arose in regards to respondents because some FSDs who work with FSMCs responded as the main contact for a specific school or district, and the professional working for the FSMC assigned to that particular school or district also responded for the same institution(s). This influenced the interpretation of data, specifically in the context of population characteristics and students eligible for free meals.

A last limitation is the potential threat to external validity, which manifests when patterns revealed within certain demographic areas of Vermont lend themselves to larger populations, especially when the study is solely taking place in Vermont. This leads to generalizations of demographic characteristics for the entire US that may not actually be valid outside of Vermont.

The quantitative approach taken to research SMPs also has inherent limitations because individual voices are not heard to the extent that could reveal discrepancies and/or patterns in SMP operations. FSDs have a unique perspective on SMPs that must be fully understood for legislative action to be relevant and truly accommodating to their needs. Often my personal conversations with food service staff are what shed the most light on the disconnect between the local level of SMP administration and the state and federal levels, yet including their opinions would pose a threat to validity insofar as bias and relevance to the research question.

I will note that what I originally viewed as a lack of consistency in data that prevented me from finding patterns eventually became a primary reason for my conclusions because the variability in data results between respondents' answers to survey questions reveals strains to the current infrastructure of SMPs.

### **Conclusions**

The overwhelming amount of literature that exists on federal school meal programs like NSLP and SBP combined with a study of how they vary in administration on state and local levels

substantiates the sheer complexity of what seems like a fairly simple national goal: providing nutritious food and instilling healthy eating habits in all children. After reviewing sixty-five years of policy, political debate, scientific and social research, supplemental programs, and changes over time in the meaning of adequate nutrition, my focus shifted once it became clear that schools essentially have to meet the set standards; funding, participation, and the integrity of food service personnel and schools are at stake. Research is particularly crucial at this point in time as the country is in transition insofar as the federal standards for school meal contents. Mere anecdotal evidence barely scratches the surface of what has become a convoluted, multi-faceted system with less than subtle political undertones.

The operation of SMPs constitutes a unique intersection of politics, public health, education, economics and social equality rarely seen in social issues on such a substantial level. It should therefore be treated as one of the most important factors governing the success for future generations. However, SMPs are not a political priority often heard about in the news and other media outlets. Searching for articles discussing school food on the New York Times and Wall Street Journal websites brings up only a handful of opinion pieces and news blurbs from the past five years despite the massive changes made in how SMPs are implemented throughout the US. The bulk of what appears in the search concerns its stigmatization as a welfare program rather than what can be done for improvement or hearing directly from food service personnel who face challenges in implementing the programs every day. It is imperative for each governmental level to take the challenges FSDs faced on a school- by-school basis into account. Further research of state operation of SMPs is necessary to have a better understanding of how they function at each administrative level.

Despite systemic breakdowns, the kinds of initiatives taken in Vermont at the state and local levels are remarkable. Vermont is unique in its awareness of providing good nutrition across populations. Measures such as FtS, school gardens, the integration of nutrition into school curriculum, and the general push for local, fresh food is contributing to a paradigm shift in the role of nutrition in children's lives. The shift must expand to all regions of America large and small if all children are expected succeed. Yet such success is only possible if school nutrition is a national priority. To reiterate, it all starts with a simple notion: providing nutritious food and inculcating healthy eating habits in all children, a responsibility not only of food service personnel but also families, teachers, school administration, and politicians with the power to instill change.

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### Appendix

Survey Tool – Sent to 113 Food Service Directors in Vermont  
Sent using SurveyMonkey©

#### SCHOOLS:

1. Please list the name(s) of the schools and/or child care institutions for which you work below.  
If more than one school, please enter each name on a new line. **(Fill in)**

#### BASIC SCHOOL INFORMATION:

2. To what grades does your school or child care institution serve lunch and/or breakfast?  
MARK ALL THAT APPLY. **(Pre-K – 12)**
3. Approximately how many students are currently attending your school(s) or institution?  
**(Fill in)**
4. As a part of the National School Lunch Program (NSLP) and National Breakfast Program (SBP), how many students qualify for FREE meals in the 2013-2014 school year? **(Fill in)**

#### FOOD SOURCES AND RESOURCES:

5. Does your school/school district or institution participate in the Fresh Fruits and Vegetable Program (FFVP) available through the U.S. Department of Agriculture's (USDA) Food and Nutrition Service? **(Yes/No)**
6. Does your school/school district or institution receive federal funding through grants provided by the USDA to implement a Farm to School program? **(Yes/No)**
7. Does your school/school district or institution participate in a Farm to School program administered in Vermont? **(Yes/No)**
8. From how many local farms and/or vendors does your school/school or institution district receive food (e.g. produce, meat, dairy)? **(Fill in)**
9. Has your school/school district or institution worked with Vermont Food Education Every Day (VT FEED) to coordinate Farm to School efforts? **(Yes/No)**
10. Does your school/school district or institution participate in the USDA's Department of Defense Fresh Fruit and Vegetable Program (DoD Fresh)? **(Yes/No)**
11. Does your school/school district or institution have a contract with a Food Service Management Company (FSMC), i.e. The Abbey Group? **(Yes/No)**

12. Is menu planning done by the school district, the FSMC, or shared by both?  
(FSMC/District/Both)

13. Does your contract include the purchasing of local food products through farms or vendors?  
(Yes/No)

#### LOCAL RESOURCES:

14. Does your school/school district or institution have an active school garden in which produce is grown and then used in subsidized school meals? (Yes/No)

15. Does your school/school district or institution receive government funding for the garden?  
(Federal/State/Local/None)

#### NUTRITION STANDARDS:

16. Aside from the Dietary Guidelines for Americans (2010), does your school/school district or institution adhere to any additional set of nutrition standards in its menu planning? MARK ALL THAT APPLY. (Institute of Medicine, Alliance for A Healthier Generation, National Alliance for Nutrition and Physical Activity, HealthierUS School Challenge, Vermont Nutrition and Fitness Policy Guidelines, N/A)

17. Does your school district have a local wellness policy? (Yes/No)

18. Does your district wellness policy include nutrition standards for food and beverages served in school meals that exceed current federal requirements? (Yes/No/Unsure)

#### MENU PLANNING:

19. Which type of meal planning guidelines does your school/school district or institution use?  
(Traditional/Enhanced/Nutrient Standard)

20. Since the 2008-2009 school year, has your school/school district or institution modified recipes to adjust calorie or nutrient content? (Yes/No)

21. Which of the following did you target in these modifications? MARK ALL THAT APPLY.  
(Calories, Protein, Vitamin A, Vitamin C, Calcium, Iron, Fat, Saturated Fat, Cholesterol, Sodium, Sugar, Trans Fat, Fiber, Whole Grains, Portion/Serving Size, N/A)

#### SCHOOL MEAL SPECIFICS

22. Pick a random breakfast meal typically served in your cafeteria(s) during the 2013-2014 school year. What does your school/one of your schools or institution serve as a part of the SBP? MARK ALL THAT APPLY. (Cereal, Fruits, Vegetables, Eggs, Grains/Breads, Bacon, Sausage, Yogurt, Milk, Juice, N/A)

23. Pick a random lunch meal typically served in your cafeteria(s) during the 2013-2014 school year. What does your school/one of your schools or institution serve as a part of the NSLP? MARK ALL THAT APPLY. **(Fruit, Vegetables, Poultry, Beef, Ham, Grains/Breads, Milk, Juice, N/A)**
24. As a part of the NSLP and/or SBP, what types of food does your school/school district or institution receive as USDA entitlement foods? MARK ALL THAT APPLY. **(Fruit, Vegetables, Grains/Breads, Meats/Meat Alternates, Juice, Milk, Cereal, Other Dairy Products)**
25. Based on your answer to Question 23, please list the fruits and vegetables you are receiving from the USDA for NSLP and/or SBP during the 2013-2014 school year. **(Fill in)**
26. Do any of the food products you receive through the USDA come from local farms or vendors? **(Yes/No)**

OVERALL EXPERIENCE:

27. Please rank the following aspects of your school/school district's or institution's nutrition program 1-7 from Most Challenging to Least Challenging. 1 = Least Challenging and 7 = Most Challenging. **(Meal planning to meet federal guidelines, working with local farms and vendors, receiving adequate reimbursement for subsidized meals, adhering to Vermont standards for school nutrition, adhering to your district wellness policy in relation to school nutrition, serving nutritious meal students will eat, modifying breakfast and lunch menus when federal guidelines change)**
28. Please give one suggestion for an improvement or area of improvement in your school/school district or institution's nutrition program as part of NSLP and/or SBP. **(Fill in)**